

NINTH EDITION

FOUNDATIONS OF **FINANCE**



KEOWN | MARTIN | PETTY

Chapter 15

Working-Capital Management



Learning Objectives

- Describe the risk-return tradeoff involved in managing working capital.
- Describe the determinants of net working capital.
- Compute the firm's cash conversion cycle.
- Estimate the cost of short-term credit.
- Identify the primary sources of short-term credit.



Working Capital

- Gross working capital - The firm's total investment in current assets.
- Net working capital - The difference between the firm's current assets and its current liabilities.
- This chapter focuses on net working capital.



Short-Term Sources of Financing

- Include current liabilities, i.e., all forms of financing that have maturities of 1 year or less.
- Two issues to consider:
 - How much short-term financing should the firm use?
 - What specific sources of short-term financing should the firm select?



How Much Short-Term Financing Should a Firm Use?

- This question is addressed by hedging principle of working-capital management.



What Specific Sources of Short-Term Financing Should the Firm Select?

- Three basic factors influence the decision:
 - The effective cost of credit
 - The availability of credit in the amount needed and for the period that financing is required
 - The influence of a particular credit source on the cost and availability of other sources of financing



MANAGING CURRENT ASSETS AND LIABILITIES



Current Assets

- A firm's current assets are assets that are expected to be converted to cash within 1 year, such as cash and marketable securities, accounts receivable, inventories.



The Risk-Return Trade-Off

- Holding more current assets will reduce the risk of illiquidity.
- However, liquid assets like cash and marketable securities earn relatively less compared to other assets. Thus, larger amounts of liquid investments will reduce overall rate of return.
- The trade-off: Increased liquidity must be traded off against the firm's reduction in return on investment.



Use of Current versus Long-Term Debt

- Other things remaining the same, the greater the firm's reliance on short-term debt or current liabilities in financing its assets, the greater the risk of illiquidity.
- The trade-off: A firm can reduce its risk of illiquidity through the use of long-term debt at the expense of a reduction in its return on invested funds. This trade-off involves an increased risk of illiquidity versus increased profitability.



The Advantages of Current Liabilities: Return

- Flexibility
 - Current liabilities can be used to match the timing of a firm's needs for short-term financing. Example: Obtaining seasonal financing versus long-term financing for short-term needs.
- Interest Cost
 - Interest rates on short-term debt are lower than on long-term debt.



The Disadvantages of Current Liabilities: Risk

- Risk of illiquidity increases due to:
 - Short-term debt must be repaid or rolled over more often
 - Uncertainty of interest costs from year to year



DETERMINING THE APPROPRIATE LEVEL OF WORKING CAPITAL



The Appropriate Level of Working Capital

- Managing working capital involves interrelated decisions regarding investments in current assets and use of current liabilities.
- Hedging principle or principle of self-liquidating debt provides a guide to the maintenance of appropriate level of liquidity.

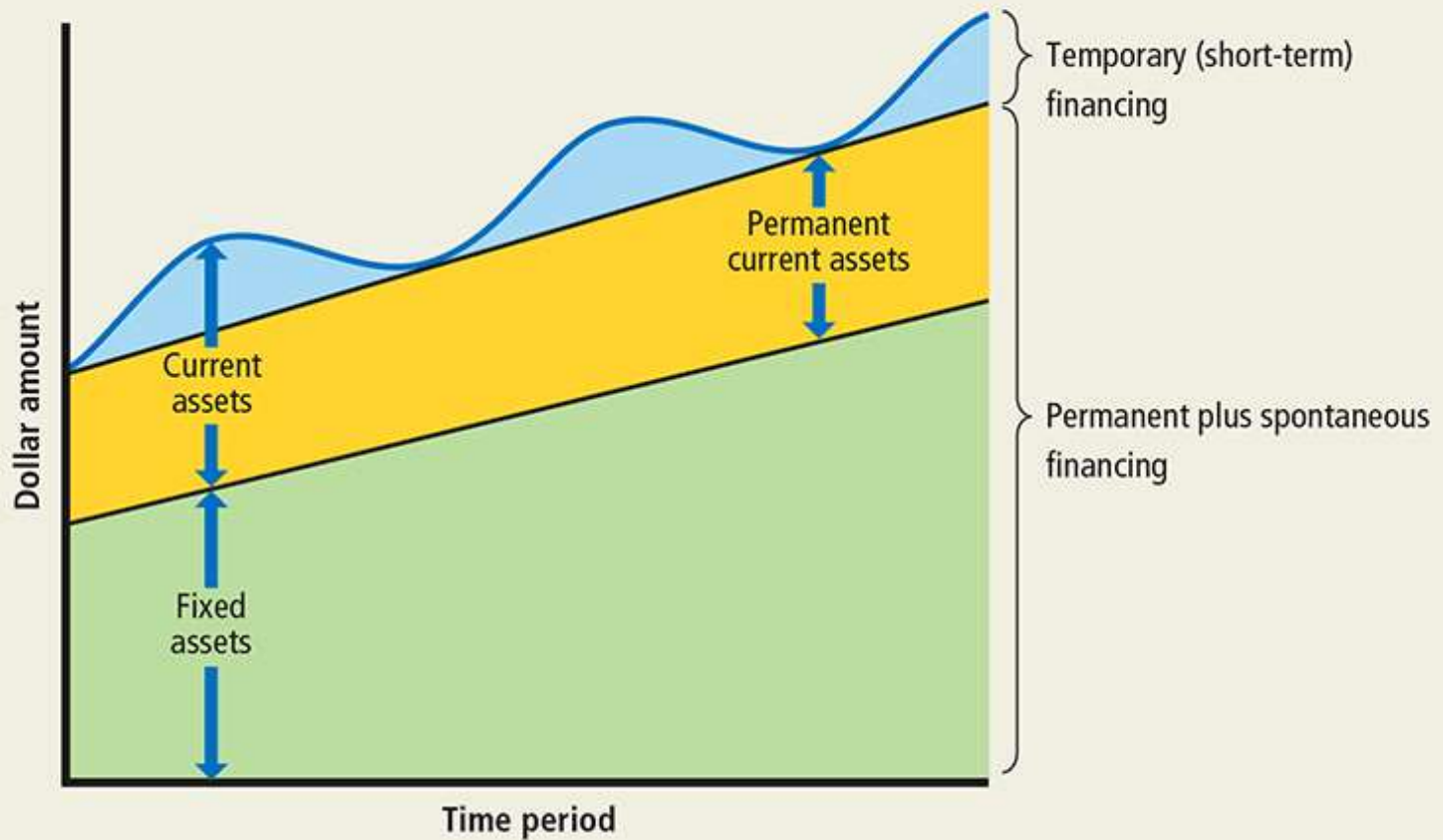


The Hedging Principle

- The hedging principle involves matching the cash-flow-generating characteristics of an asset with the maturity of the source of financing used to finance its acquisition.
- Thus, a seasonal need for inventories should be financed with a short-term loan or current liability.
- On the other hand, investment in equipment that is expected to last for a long time should be financed with long-term debt.



FIGURE 15-1 The Hedging Principle Illustrated





Permanent and Temporary Assets

Permanent investments

- Investments that the firm expects to hold for a period longer than one year

Temporary investments

- Current assets that will be liquidated and not replaced within the current year



Sources of Financing

- Total assets will be equal to sum of temporary, permanent, and spontaneous sources of financing.



Temporary and Permanent Sources

- Temporary sources of financing consist of current liabilities such as short-term secured and unsecured notes payable.
- Permanent sources of financing include intermediate-term loans, long-term debt, preferred stock, and common equity.



Spontaneous Sources of Financing

- Spontaneous sources of financing arise spontaneously in the firm's day-to-day operations.
 - Trade credit is often made available spontaneously or on demand from the firm's suppliers when the firm orders its supplies or more inventory of products to sell. Trade credit appears on balance sheet as accounts payable.
 - Wages and salaries payable, accrued interest, and accrued taxes also provide valuable sources of spontaneous financing.



TABLE 15-1 The Hedging Principle Applied to Working-Capital Management

A firm's asset needs that are not financed by spontaneous sources of financing should be financed in accordance with the following "matching rule"—permanent-asset investments are financed with permanent sources, and temporary-asset investments are financed with temporary sources of financing.

Classification of a Firm's Investments in Assets	Definitions and Examples	Classification of a Firm's Sources of Financing	Definitions and Examples
Temporary investments	<i>Definition:</i> Current assets that will be liquidated and not replaced within the year. <i>Examples:</i> Seasonal expansions in inventories and accounts receivable.	Spontaneous financing Temporary financing	<i>Definition:</i> Financing that arises more or less automatically in response to the purchase of an asset. <i>Examples:</i> Trade credit that accompanies the purchase of inventories and other types of accounts payable created by the purchase of services (for example, wages payable). <i>Definition:</i> Current liabilities other than spontaneous sources of financing. <i>Examples:</i> Notes payable and revolving credit agreements that must be repaid in a period less than 1 year.
Permanent investments	<i>Definition:</i> Current and long-term asset investments that the firm expects to hold for a period longer than 1 year. <i>Examples:</i> Minimum levels of inventory and accounts receivable the firm maintains throughout the year as well as its investments in plant and equipment.	Permanent financing	<i>Definition:</i> Long-term liabilities not due and payable within the year and equity financing. <i>Examples:</i> Term loans, notes, and bonds as well as preferred and common equity.



THE CASH CONVERSION CYCLE



The Cash Conversion Cycle

- A firm can minimize its working capital by speeding up collection on sales, increasing inventory turns, and slowing down the disbursement of cash. This is captured by the cash conversion cycle (CCC).

$$\begin{array}{ccccccc} \text{Cash} & & \text{days of} & & \text{days of} & & \text{days of} \\ \text{conversion} & = & \text{sales} & + & \text{sales in} & - & \text{payables} \\ \text{cycle (CCC)} & & \text{outstanding (DSO)} & & \text{inventory (DSI)} & & \text{outstanding (DPO)} \end{array}$$



TABLE 15-2 The Determinants of Dell Computer Corporation's Cash Conversion Cycle for 1995–2012

Cash conversion cycle (CCC) = days of sales outstanding (DSO) + days of sales in inventory (DSI) – days of payables outstanding (DPO)

	1995	2000	2005	2012
Days of sales outstanding (DSO)	50.04	33.14	35.59	63.09
Days of sales in inventory (DSI)	37.36	5.79	4.65	11.58
Days of payables outstanding (DPO)	40.58	62.07	79.41	97.06
Cash conversion cycle (CCC)	46.81	(23.14)	(39.17)	(22.39)



ESTIMATING THE COST OF SHORT- TERM CREDIT USING THE APPROXIMATE COST-OF-CREDIT FORMULA



Cost of Short-Term Credit

$$\text{Interest} = \text{principal} \times \text{rate} \times \text{time} \quad (15-5)$$

$$APR = \frac{\text{interest}}{\text{principal} \times \text{time}} \quad (15-6)$$

$$APR = \frac{\text{interest}}{\text{principal}} \times \frac{1}{\text{time}} \quad (15-7)$$



APR example

- A company plans to borrow \$1,000 for 90 days. At maturity, the company will repay the \$1,000 principal amount plus \$30 interest. What is the *APR*?

$$\begin{aligned} APR &= \frac{\$30}{\$1,000} \times \frac{1}{90/360} \\ &= 0.03 \times \frac{360}{90} = 0.12 = 12\% \end{aligned}$$



Annual Percentage Yield (*APY*)

- *APR* does not consider compound interest. To account for the influence of compounding, we must calculate *APY* or annual percentage yield.

$$APY = \left(1 + \frac{i}{m}\right)^m - 1$$

Where:

i is the nominal rate of interest per year

m is number of compounding periods within a year



APY example

- In the previous example,
of compounding periods $360/90 = 4$
Rate = 12%

$$APY = \left(1 + \frac{0.12}{4}\right)^4 - 1 = 0.126 = 12.6\%$$



***APR* or *APY* ?**

- Because the differences between *APR* and *APY* are usually small, we can use the simple interest values of *APR* to compute the cost of short-term credit.



SOURCES OF SHORT-TERM CREDIT



Sources of Short-Term Credit

Short-term credit sources can be classified into two basic groups:

- Unsecured sources
- Secured sources



Unsecured Loans

- Unsecured loans include all of those sources that have as their security only the lender's faith in the ability of the borrower to repay the funds when due.
- Major sources:
 - accrued wages and taxes, trade credit, unsecured bank loans, and commercial paper



Secured Loans

- Involve the pledge of specific assets as collateral in the event the borrower defaults in payment of principal or interest
- Primary suppliers:
 - Commercial banks, finance companies, and factors
- Principal sources of collateral:
 - Accounts receivable and inventories



Unsecured Sources: Accrued Wages and Taxes

- Since employees are paid periodically (biweekly or monthly), firms accrue a wage-payable account that is, in essence, a loan from their employees.
- Similarly, if taxes are deferred or paid periodically, the firm has the use of the tax money.



Unsecured Sources: Trade Credit

- Trade credit arises spontaneously with the firm's purchases. Often, the credit terms offered with trade credit involve a cash discount for early payment.
- For example, the terms "2/10 net 30" means a 2% discount is offered for payment within 10 days, or the full amount is due in 30 days.
- In this case, a 2% penalty is involved for not paying within 10 days.



TABLE 15-3 The Rates of Interest on Selected Trade Credit Terms

Credit Terms	Effective Rates
2/10, net 60	14.69%
2/10, net 90	9.18
3/20, net 60	27.84
6/10, net 90	28.72



Effective Cost of Passing Up a Discount

- Ex.: Terms 2/10 net 30
- The equivalent *APR* of this discount is:

$$APR = \frac{\$0.02}{\$0.98} \times \frac{1}{20/360} = 0.3673 = 36.73\%$$

- The effective cost of delaying payment for 20 days is 36.73%.



Unsecured Sources: Bank Credit

- Commercial banks provide unsecured short-term credit in two forms:
 - **Lines of credit**
 - **Transaction loans** (notes payable)



Line of Credit

- Informal agreement between a borrower and a bank about the maximum amount of credit the bank will provide the borrower at any one time.
- There is no legal commitment on the part of the bank to provide the stated credit.
- Banks usually require that the borrower maintain a minimum balance in the bank throughout the loan period (known as compensating balance).
- Interest rate on a line of credit tends to be floating.



Revolving Credit

- Revolving credit is a variant of the line of credit form of financing.
- A legal obligation is involved.



Transaction Loans

- A transaction loan is made for a specific purpose. This is the type of loan that most individuals associate with bank credit and is obtained by signing a promissory note.



Unsecured Sources: Commercial Paper

- The largest and most credit-worthy companies are able to use commercial paper—a short-term promise to pay that is sold in the market for short-term debt securities.
- Maturity: Usually 6 months or less.
- Interest Rate: Slightly lower (1/2 to 1%) than the prime rate on commercial loans.
- New issues of commercial paper are placed directly or dealer placed.



Commercial Paper: Advantages

- **Interest rates**
 - Rates are generally lower than rates on bank loans
- **Compensating-balance requirement**
 - No minimum balance requirements are associated with commercial paper
- **Amount of credit**
 - Offers the firm with very large credit needs a single source for all its short-term financing
- **Prestige**
 - Signifies credit status



Secured Sources of Loans

- Secured loans have assets of the firm pledged as collateral. If there is a default, the lender has first claim to the pledged assets. Because of its liquidity, accounts receivable is regarded as the prime source for collateral.
- **Accounts Receivable Loans**
 - Pledging Accounts Receivable
 - Factoring Accounts Receivable
- **Inventory Loans**



Pledging Accounts Receivable

- Borrower pledges accounts receivable as collateral for a loan obtained from either a commercial bank or a finance company.
- The amount of the loan is stated as a percentage of the face value of the receivables pledged.
- If the firm pledges a general line, then all of the accounts are pledged as security (simple and inexpensive).



Pledging Accounts Receivable

- If the firm pledges specific invoices, each invoice must be evaluated for creditworthiness (more expensive).
- Credit Terms: Interest rate is 2–5% higher than the bank's prime rate. In addition, handling fee of 1–2% of the face value of receivables is charged.
- While pledging has the attraction of offering considerable flexibility to the borrower and providing financing on a continuous basis, the cost of using pledging as a source of short-term financing is relatively higher compared to other sources.



Factoring Accounts Receivable

- Factoring accounts receivable involves the outright sale of a firm's accounts to a financial institution called a factor.
- A factor is a firm (such as commercial financing firm or a commercial bank) that acquires the receivables of other firms. The factor bears the risk of collection in exchange for a fee of 1–3% of the value of all receivables factored.



Secured Sources: Inventory Loans

- These are loans secured by inventories.
- The amount of the loan that can be obtained depends on the marketability and perishability of the inventory.



Types of Inventory Loans

Floating or Blanket Lien Agreement

- The borrower gives the lender a lien against all its inventories.

Chattel Mortgage Agreement

- The inventory is identified and the borrower retains title to the inventory but cannot sell the items without the lender's consent.



Types of Inventory Loans

Field Warehouse-Financing Agreement

- Inventories used as collateral are physically separated from the firm's other inventories and are placed under the control of a third-party field-warehousing firm.

Terminal Warehouse Agreement

- Inventories pledged as collateral are transported to a public warehouse that is physically removed from the borrower's premises.



Key Terms

- Chattel mortgage agreement
- Commercial paper
- Compensating balance
- Factor
- Factoring accounts receivable
- Field-warehouse agreement
- Floating lien agreement
- Gross working capital
- Hedging principle
- Inventory loans
- Line of credit
- Net working capital
- Operating net working capital
- Permanent investments
- Pledging accounts receivable
- Revolving credit agreement
- Secured loans
- Temporary investments
- Terminal-warehouse agreement
- Trade credit
- Transaction loan
- Unsecured loans