Corporate Cash Management

2nd Edition

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CPE Edition

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Course Information

Course Title: Corporate Cash Management

Learning Objectives:

- Recognize cash manager key tasks
- Determine who is responsible for management of the employee stock purchase plan
- Identify a reason that control over the credit function may be given to the treasurer
- Recognize aspects of the receipts and disbursements method
- Pinpoint areas in the medium-term cash forecast that will need manual updates
- Identify types of cash forecast information which are considered highly reliable
- Discern the purpose of bank reconciliations from a cash management perspective
- Spot the primary difference between the bank and book balances in a bank reconciliation
- Identify the purpose for a proof of cash
- Recognize a reconciliation problem associated with voided checks
- Discern how frequently it is necessary to track foreign exchange exposure
- Recognize an aspect of supply chain financing
- Determine the purpose of the Internet lock out feature
- Identify a procedure which can help to offset the cost of a treasury management system
- Determine a measure which can be taken to prevent a delay of the daily bank deposit
- Recognize an advantage of a bank lockbox
- Identify an alternative to a lockbox
- Pinpoint a benefit of remote deposit capture
- Identify a characteristic of a threshold cash sweep
- Recognize a feature of notional pooling
- Identify the purpose of multi-tiered banking
- Determine the best type of cash pooling system for control of the cash balance
- Identify the key advantage of a bank draft
- Pinpoint a characteristic of a global ACH system
- Determine what a standby letter of credit is used for
- Identify an action that will reduce the investment in accounts receivable
- Recognize examples of the holding costs associated with inventory
- Pinpoint how to reduce the amount of safety stock
- Identify a strategy to reduce a company's investment in working capital
- Recognize how a one-to-many cash sweep can cause trouble
- Identify the effect of an inverted yield curve on interest rates
- Determine why commercial paper has a short maturity
- Ascertain the purpose of a secondary market
- Determine the function of the Ex-Im Bank
- Recognize a common debt covenant
- Spot an aspect of restricted stock
- Identify a characteristic of an accredited investor
- Identify one of the major agencies which control most of the credit rating market
- Recognize the meaning of a particular credit rating
- Identify the function of a correspondent bank
- Recognize the meaning of an "on-us" check
- Identify what the Fedwire system is
- Discern the intent of the Continuous Linked Settlement system

- Determine the basis of transaction exposure
- Identify an example of an operational hedge
- Recognize what a forward contract can be used for
- Ascertain when payment netting is used
- Discern when it would be a reasonable option not to mitigate interest rate risk
- Determine why an owner would use a call option
- Identify a characteristic of an interest rate swaption
- Identify the minimum controls needed for cash forecasting
- Determine when to review interest income allocations
- Recognize the purpose of receipt matching
- Ascertain the purpose of using a clearing account in cash management
- Recognize general areas in which a cash manager would need to install metrics
- Calculate days' sales in accounts receivable for a given example
- Identify what is included in the calculation of earnings on invested funds

Subject Area: Finance

Prerequisites: None

Program Level: Overview

Program Content: *Corporate Cash Management* reveals how to create a cash forecast, invest cash, raise funds, implement cash controls, mitigate foreign exchange risk, and more.

Advance Preparation: None

Recommended CPE Credit: 15 hours

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Preface

Cash is essential to the daily functions of a business, and yet it is rarely managed to ensure that sufficient cash is on hand, or that excess cash is properly invested. Instead, cash is considered just another item to be handled by the accounting department, which can result in periodic cash shortages or excess cash being invested incorrectly, if at all. *Corporate Cash Management* reveals how to create a system from which to compile a detailed cash forecast, discusses the processes related to cash inflows and outflows, describes how to mitigate risks associated with cash, and many other topics related to cash management.

Following an introduction to cash management in Chapter 1, we cover in Chapters 2 through 4 the information needed to create a detailed cash forecast. Next, in Chapters 5 and 6, we address the systems for collecting and concentrating incoming cash for operational and investment activities. We then cover the types and characteristics of payments in Chapter 7, before moving on to a broad-ranging discussion of how to improve cash flows with alterations to working capital. The book then describes investment strategy and a number of the more common investment vehicles in Chapter 9, as well as debt and equity funding methods in Chapter 10 and credit rating agencies in Chapter 11. After a discussion of the larger clearing and settlement systems in Chapter 12, we move on in Chapters 13 and 14 to the concept of risk in relation to foreign exchange and interest rates, as well as how to mitigate those risks. Finally, Chapters 15 and 16 address the controls that can be implemented over cash flows, as well as the metrics available for monitoring various aspects of cash flows. The chapters include tips, podcast references, and a variety of illustrations.

You can find the answers to many questions about cash management in the following chapters, including:

- Who is responsible for cash management?
- How do I construct a cash forecast?
- What are the features of a treasury management system?
- How does remote deposit capture work?
- What are the features of a notional pooling system?
- How can I reduce the cash committed to inventory?
- How do I use laddering to increase the return on invested funds?
- How do I register stock?
- How can I shift foreign exchange risk to another party?
- How does a forward rate agreement mitigate the variability of interest rates?

Corporate Cash Management is designed for both professionals and students. Professionals can use it as a reference tool for improving their cash management systems, while it provides students with an overview of how cash flows can be anticipated and handled. Given its complete coverage of cash management, *Corporate Cash Management* may earn a permanent place on your book shelf.

About the Author

Steven Bragg, CPA, has been the chief financial officer or controller of four companies, as well as a consulting manager at Ernst & Young. He received a master's degree in finance from Bentley College, an MBA from Babson College, and a Bachelor's degree in Economics from the University of Maine. He has been a two-time president of the Colorado Mountain Club, and is an avid alpine skier, mountain biker, and certified master diver. Mr. Bragg resides in Centennial, Colorado. He has written the following books and courses:

Accountants' Guidebook
Accounting Controls Guidebook
Accounting for Inventory
Accounting for Investments
Accounting for Managers
Accounting Procedures Guidebook
Budgeting
Business Ratios
CFO Guidebook
Closing the Books
Constraint Management
Corporate Cash Management
Cost Accounting Fundamentals
Cost Management Guidebook
Credit & Collection Guidebook
Financial Analysis
Fixed Asset Accounting
GAAP Guidebook
Human Resources Guidebook
IFRS Guidebook
Inventory Management
Investor Relations Guidebook
Lean Accounting Guidebook
Mergers & Acquisitions
New Controller Guidebook
Nonprofit Accounting
Payroll Management
Revenue Recognition

Chapter 1
Introduction to Cash Management

Learning Objectives

- Recognize cash manager key tasks
- Determine who is responsible for management of the employee stock purchase plan
- Identify a reason that control over the credit function may be given to the treasurer

Introduction

Cash management should be a central function of any business, since cash must be made available in the correct amounts and with the proper timing to ensure that company functions are not impeded. Unfortunately, some organizations bury cash management within the accounting department as a minor secondary function, where it is simply one of many chores for the overburdened accounting staff to handle. The result may be a continuing series of cash shortfalls, or instances where cash is allowed to build up without any meaningful attempt to invest it.

In this chapter, we describe the nature of cash management, how the function should be organized, who should be responsible for it, and several related issues.

The Nature of Cash Management

Cash management involves the oversight of every cash inflow and outflow that a business experiences, with the goals of always having enough liquidity to operate the business, and finding the best possible use for any remaining liquidity. The key aspects of cash management are:

1. **Information aggregation.** It is impossible to manage cash without knowing where it is, when more is expected, and how soon it will be used. This knowledge requires an excellent information aggregation system that reveals where the company is currently storing cash, and the nature of its short-term receivables and payables.
2. **Liquidity management.** With an adequate knowledge of cash flows in hand, it is then possible to invest excess funds or acquire debt in an orderly manner, so that sufficient cash is always on hand to meet the operational needs of the business.
3. **Risk management.** The company's business partners should be regularly evaluated to see if their financial circumstances could lead to failure, which may call for changes in credit policy; this examination can extend to entire groups of partners or geographic regions. Further, the company's foreign exchange holdings should be continually reviewed to see if any hedging transactions should be enacted to offset the risk of currency fluctuations. The same methodology can be applied to fluctuations in interest rates.

The preceding list of cash management aspects were listed in order of importance, for liquidity and risk management are impossible without a system for aggregating cash flow information. Also, improper or nonexistent liquidity management will bring a company's operations to a halt in short order, so that must take priority over risk management. Despite its last place positioning on the list, risk management is still important, since a company can incur massive losses if it does not pay attention to the risks posed by counterparty failure or fluctuations in currency exchange rates.

We can translate these three general areas of cash management into a number of more specific activities and knowledge areas, which are noted in the following table, along with the chapters in which additional information is located.

Cash Management Activities

Cash Management Area	Type of Activity or Knowledge Area
Information aggregation	The cash forecast (Chapter 2)
	The bank reconciliation (Chapter 3)
	The information requirements for cash management (Chapter 4)
Liquidity management	The management of cash receipts (Chapter 5)
	Methods used to concentrate cash (Chapter 6)
	Methods used to issue payments (Chapter 7)
	Enhancements to working capital to generate cash (Chapter 8)
	The management of investments (Chapter 9)
	Obtaining debt and equity funding (Chapter 10)
	Credit Rating Agencies (Chapter 11)
	Clearing and settlement systems (Chapter 12)
Risk management	Risk management for foreign exchange (Chapter 14)
	Risk management for interest rates (Chapter 15)

The task of cash management is infinitely more complex when a company has multiple subsidiaries, and especially when subsidiaries operate within other countries. If your company has this level of organizational complexity, pay particular attention to the chapters covering information requirements (Chapter 4), cash concentration (Chapter 6), clearing and settlement systems (Chapter 12), and risk management related to foreign exchange and interest rates (Chapters 13 and 14).

A company operating from a single location faces a much easier cash management chore. In this case, the chapters of particular interest are cash forecasting (Chapter 2) and the first six chapters covering liquidity management (Chapters 5 through 10).

In addition to the core areas just noted, it is essential to maintain a strong system of controls over the cash management function, which we address in Chapter 15. Finally, it is useful from a management perspective to monitor how well the cash management function operates, for which we provide a discussion of relevant metrics (Chapter 16).

The Cash Manager Job

Cash management is typically assigned to the treasury department. There may not be a person within that department with the "cash manager" title; instead, the treasurer has overall responsibility for cash management, and he or she parcels out cash management tasks among the treasury staff. The key cash manager tasks that should be handled by the treasury department are:

- **Forecast cash.** It is impossible to manage cash without having a detailed cash forecast in place that is updated regularly. This forecast should incorporate a timeline sufficiently long to encompass the longest-term investment strategy that the treasurer plans to use. A cash forecast is the source document for many treasury functions.
- **Systems analysis.** A cash forecast cannot be constructed unless the underlying accounting systems that record cash-related activities are properly forwarding information to the treasury department in a timely manner. Accordingly, the treasury staff should have an excellent knowledge of how information is collected, aggregated, and forwarded, as well as the areas in which errors are most likely to occur, and which types of information are not included in these formal data collection systems.
- **Monitor cash flows.** The cash manager should monitor cash receipts and disbursements continually, and shift funds among the company's various bank accounts and investments in reaction to those cash flows.
- **Ensure liquidity.** The key cash management task by far is to ensure that there is always enough cash on hand to support company operations. This means at least having sufficient cash to pay a

company's trade accounts payable and payroll obligations when they are due. Having sufficient liquidity requires that a portion of all cash be invested in readily-liquidated investments, and that a sufficient line of credit is accessible to provide funds for any remaining obligations.

- **Obtain funding.** A key aspect of liquidity is to ensure that a company has access to a sufficient amount of debt financing at a reasonable interest rate. This is usually a mix of long-term debt on a fixed repayment schedule and a short-term line of credit. It may also be necessary to sell company stock from time to time to obtain additional funding.
- **Manage risk.** There should be continual monitoring of the risk posed by the types of investments used, the stability of lenders, legal restrictions on cash flows, and the inherent variability of foreign exchange rates and interest rates. An active treasury staff can alter investments, change lenders, and engage in a variety of passive and active hedges to mitigate these risks.
- **Invest cash.** It is much more important to ensure proper liquidity levels than to obtain a high return on investment. Nonetheless, the cash manager should ensure that all excess cash is "working" for the business by parking it in some form of investment, no matter how small the return may be. The result may be a mix of short-term and long-term investments, or a reduction in the amount of outstanding debt.

The preceding list addressed the major day-to-day cash manager tasks. In addition, the following activities may be required from time to time:

1. **Account Maintenance**
   - Determine whether any bank accounts can be terminated or consolidated. This step is needed to keep cash from unproductively sitting in unused accounts.
   - Analyze bank charges to see if fees are reasonable. This analysis can extend to the overall cost of individual bank accounts.
   - Ensure that the bank has been notified of any employee terminations that alter the status of check signers in the bank's records. This item mitigates the risk of having a former employee sign a stolen company check.

2. **Debt Management**
   - Maintain a schedule that itemizes all debts outstanding. The schedule should note ongoing payment amounts and due dates, as well as the due dates and amounts of any balloon payments.
   - Maintain a schedule of any covenants imposed by lenders, and compare the company's performance and financial position to these covenants, both currently and prospectively. This item provides warning that a debt covenant may be breached in the near future, so that corrective action can be taken.
   - Calculate the amount of borrowing base, and compare it to the amount of debt currently outstanding under the corporate line of credit, which yields the amount of unused debt available for borrowing. There are only so many assets available to use as collateral, so the treasury staff should be careful to apportion assets among the various debt obligations of the business.
   - If the company has issued debt for which a credit rating agency rating was required, ensure that the rating agency is made aware of all changes in the company's financial position, and that all of the rating agency's queries are answered. This is needed to maintain the credit rating for the debt instruments. A reduction in credit rating will trigger an increase in the company's cost of debt.

3. **Equity Management**
   - Advise the CFO and board of directors regarding the timing and sustainable amount of any dividends to be declared for payment to shareholders.
   - Manage any stock repurchase plans authorized by the board of directors, so that stock repurchases are timed to avoid any forecasted cash shortfalls. Stock repurchase plans tend to run for long periods of time, and can be triggered at the discretion of the treasurer.

- Manage the sale of company stock. Stock issuances are usually not that common, but can yield massive cash inflows, and the treasury staff must be involved in planning for and using the resulting cash.
- Manage the employee stock purchase plan. This is a minor function that can easily be administered by the human resources or accounting departments, but does give some insight into the cash flows paid in by employees who want to acquire company stock.

4. **Hedge Management**
   - Summarize all information about each hedging instrument, and how it is intended to offset the risk associated with another transaction. This information is needed for hedge accounting, as well as to monitor how well certain risks are being mitigated.
   - Monitor hedges to ensure that they comply with the company's hedging strategy. Monitoring should be a frequent activity, since cash management involving foreign currencies can cause rapid changes in risk levels.

5. **Investment Management**
   - Maintain a schedule that itemizes all investments, other than overnight investment instruments. Note on the schedule the types of investments, maturity dates, interest rates, and the currencies in which they are denominated. This schedule is useful for hedging investments denominated in other currencies, as well as for determining when to roll over investments into replacement investments.
   - Monitor investments to ensure that they comply with the company's investment policy. This step is used to ensure that unusually risky or excessively long-term investments are avoided.

6. **Other Areas**
   - Aggregate the amount of risk to the company if a counterparty were to fail. This can involve a single business partner, such as a key customer, or can encompass entire industries or geographic regions in which the company does business. The intent is to be aware of the impact on cash flows in the event of a financial downturn. This analysis can lead to a reapportionment of cash among different banks, or altering the amount of business the company is willing to do with some customers, industries, regions, or countries.
   - Oversee the activities of any third parties that handle the company's cash management functions. For example, an outside cash manager should operate under specific investment guidelines supplied by the treasurer.
   - Advise management on the liquidity aspects of each iteration of the corporate budget. This is needed to avoid a budget whose cash requirements are too demanding for the treasury department to support.
   - Advise management regarding the impact of various operational changes on the amount of working capital that must be invested in the business. The treasury staff is usually placed in an advisory role regarding working capital, which allows the treasurer to note how such changes as loosening credit or increasing the order fulfillment rate will impact a company's cash requirements.
   - Report to management regarding the reasons for any historical or prospective cash flow changes. This requires a deep knowledge of how cash flows originate in a business, and should be reported in the context of how management can make changes to improve cash flows.

Responsibility for Cash Management

We have already noted that responsibility for cash management rests with the treasury department. However, the situation is not so clear-cut when viewed from the perspective of the many areas that have

an impact on cash flows. We can divide these areas into those traditionally handled by treasury, and those more commonly managed by the accounting department. The areas are:

- Traditional treasury responsibilities: Cash forecasting, investment management, bank relations, and debt management
- Traditional accounting responsibilities: Credit management, collections, and accounts payable

It is useful to understand how this division of responsibilities historically arises in most organizations. Usually, there is no treasury department when a company is in the early stages of its growth, because all treasury tasks are handled by the controller or CFO. Once a certain critical mass is attained, a treasurer is hired to manage forecasting, investments, debt, and banking relations. The other areas just noted that impact cash management typically remain under the supervision of the controller, for the following reasons:

- **Transaction basis.** Credit, collections, and accounts payable are all heavily transaction oriented, which is a strength of the accounting department.
- **Integration.** The controller wants to integrate these three functional areas into the other accounting activities. There is a particularly strong argument in favor of integrating the credit, billing, and collection functions, since they all relate to the receipt of cash from customers.
- **Power.** Controllers do not like to give up control over any functions that they consider to traditionally reside under the umbrella of accounting activities.

Since there is usually a controller in place well before a treasurer is hired, the controller is in a better position to retain control of areas that might otherwise be shifted to the treasurer. Hence, we see that credit, collections, and payables are not normally considered part of the cash management functional area.

However, a strong case can be made that the accounts payable area in particular could be placed within the treasury department. By doing so, the treasurer has better control over exactly when cash outflows will occur, since payments can be accelerated or delayed. At a minimum, the treasurer can be given authority over the payment schedule. For example, the treasurer can be required to sign off on all cash payments in advance, while leaving day-to-day management of accounts payable to the controller. Either approach to giving the treasurer greater involvement will mean that the treasury does not just compile the cash forecast, but can also influence the cash outflows listed on it.

The same logic cannot be applied so readily to the collections function. In this area, the exact timing of cash receipts is not so certain, since customers have ultimate control over the timing and amount of payments. This means that the treasurer does not necessarily improve control over cash receipts simply by running the collections staff. In this area, a better case can be made for having the controller manage the process, especially since it can be readily integrated with the billing function.

If the treasurer has control over the credit function, this does allow for better control over the amount of credit being granted to customers, which has a general impact on cash inflows over the medium-term. However, changing the management of the credit function does not improve the accuracy of the cash forecast. Nonetheless, a number of companies have shifted the credit function into the treasury department, for the following reasons:

- **Weak linkage to accounting.** The credit function is not tightly integrated into the other accounting areas, and so is more easily split off.
- **Policy-level management.** The management of credit is at more of a policy level, where the treasurer can periodically adjust the general credit policy, and otherwise leave individual credit granting decisions to the credit manager. Thus, the function is relatively easy to manage, while still having an impact on cash flows.

In summary, an argument can be made for shifting accounts payable to the treasury department, if only to improve forecasting accuracy. There is also a relatively strong argument in favor of having the treasurer manage the credit function, since doing so yields some general control over cash inflows.

Control over the collections function, however, will not yield any discernible improvement in cash inflows, and so is best left under the supervision of the controller.

Cash Management Centralization

It may seem that the cash management task should be centralized at the parent company, since doing so allows for the investment of larger amounts of cash in higher-yielding instruments, as well as a more intensive level of risk management. Similarly, having a specialist actively monitor cash should result in the more active use of cash that might otherwise lie unnoticed in outlying bank accounts. However, there are situations where centralizing cash management will not work. Consider the following:

- **Inadequate systems.** A company may be comprised of a conglomeration of subsidiaries, each with its own accounting systems, and none of which are linked together. If so, it is so difficult to aggregate cash flow information in a timely manner that there may be no point in attempting to centralize cash management.
- **Inadequate cash flows.** If a company routinely operates at minimal cash usage levels without spinning off much cash, it will not be cost-effective to centralize cash management. The parent company will have incurred the expense of hiring a treasury staff, but there will not be enough cash on hand for them to earn sufficient investment income to offset their own expense.
- **Decentralization.** Some companies are deliberately structured to have the smallest possible corporate staff, with responsibility being pushed down to local subsidiaries. In this case, centralizing cash management runs counter to the operating principles of the business, and so will probably not be allowed.
- **Cross-border cash flows.** Some countries do not allow cash to be repatriated outside of their borders, in which case cash management must be performed at the local country level (though cash management can be centralized across multiple companies *within* these countries).

Of the points made here, the first is the most common, and calls for the installation of a centralized accounting system before serious inroads can be made on the cash management task. However, in every case noted above, it should still be possible to engage in cash management principles at the local level – there just will not be any benefits gained from cash aggregation.

Once a business reaches a certain critical mass, there should be greater consideration of the benefits of cash management centralization. Consider the following improvements that are impossible in a decentralized environment:

- **Netting.** The information forwarded from each subsidiary can be netted to determine how many payments are due to and from each subsidiary. This information can be used to only transfer the net payment difference between subsidiaries, thereby minimizing float times and the cost of cash transfers.
- **Large investment instruments.** A single subsidiary may not have sufficient cash to invest for longer terms in higher-yielding investment instruments that have high minimum investments. By combining cash balances, these higher returns will be available to a centralized cash management group.
- **Reduced banking relationships.** A centralized group will be more likely to concentrate banking relationships among a smaller number of banks, which it needs for cash concentration purposes.
- **Centralized debt management.** It is much easier to obtain debt in large quantities for a company as a whole, than to do so for each individual subsidiary. The result may well be a lower net interest rate, as well as fewer loan maintenance fees. Local-level covenants can also be eliminated.

As a company changes over time, evaluate each of the preceding factors to determine at what point it becomes cost-effective to switch to a centralized cash management system. Also, depending on the circumstances, such as the sale of key divisions, it may be more cost-effective to do the reverse, and *decentralize* the function.

It is possible that there will be a gradual progression from a decentralized to a centralized cash management environment. If you prefer to adopt centralization with this piecemeal approach, the following steps reveal a possible method of progression:

1. **Invest large cash positions.** A subsidiary may build up a large cash position over time, or suddenly receive a large cash inflow. In either case, even the simplest reporting system will make the corporate treasury staff aware of the cash position, for which it can find a reasonably high-return investment instrument.
2. **Division-level cash management.** Encourage either individual subsidiaries or groups of subsidiaries to adopt basic cash forecasting, cash concentration, and other cash management principles. By doing so, knowledge is spread through the company of general cash management principles, though at the cost of duplicating a number of treasury positions throughout the company.
3. **Division-level risk management.** When there are obvious risks associated with foreign currency holdings or interest rates, division-level cash management groups can be encouraged to create a variety of hedges to mitigate risk. This will likely require the participation of a corporate-level risk manager who advises the divisions about risk management techniques.
4. **Centralized cash forecasting.** It is impossible to forecast from a central location without an integrated cash forecasting system, so this must be installed before any further centralized cash management can be conducted.
5. **Centralized cash flow management.** With a cash forecasting system in place, the corporate treasury group takes over the monitoring of cash flows, nets cash flows across divisions, sets up a company-wide cash concentration system, and acquires debt and equity funding for the entire company. It is possible in a multi-national company that local cash concentration systems will be maintained, and linked to an international cash pool operated by the corporate treasury group. Also, existing lockbox networks may be evaluated and reconfigured to be more efficient across the entire company.
6. **Centralized risk management.** With the basics of cash flow management completed, the treasury group can now take over risk management from the local divisions, and can achieve more effective solutions by aggregating cash positions across the entire company. Division-level cash management groups can be disbanded at this point.
7. **Consolidate bank accounts.** Over time, the corporate group will likely evaluate the banking arrangements it inherited from the subsidiaries, and will consolidate its business with a smaller number of larger banks, which will allow for the creation of a smaller number of more comprehensive cash concentration systems.
8. **Centralize transaction processing.** Once cash management has been centralized, it will become more obvious that the treasury group will have more control over cash flows if it can centralize the outflow of cash with a single, centralized accounts payable system. Doing so eliminates the variability in timing of cash outflows from uncontrolled local accounts payable systems. There may also be an initiative to centralize credit and collections, but they are less crucial, since the resulting cash inflows will still be difficult to predict.

These steps do not represent an inevitable progression to a centralized cash management function. As noted earlier, changes in the size and structure of a company over time may make it cost-effective to only advance to a certain point in the progression, and to possibly even regress back to an earlier stage. Realistically, only a large company with considerable revenue, well-integrated systems, and a commitment to centralized cash management will achieve all of the centralization steps.

Tip: A variation on the centralization concept is to centralize cash management by time zone cluster, which usually requires a separate team for the American, Asian, and European time zones. Doing so matches up regional cash management activities with the business hours of local banking systems.

We now turn to a brief discussion of banking relationships, which form a key part of a comprehensive system of cash management.

Banking Relationships

To maintain a proper banking relationship, the treasurer and CFO should periodically meet with their relationship manager at the bank. During this meeting, there should be as much information sharing as possible, so the bank is not blindsided by sudden changes in the company's cash position, investments, or borrowing needs over the coming months. The following topics should be addressed at every meeting:

- **Recent results.** Discuss financial results, cash flows, and any unusual changes in the amounts of assets and liabilities. Make note of any changes related to seasonality.
- **Cash flow expectations.** Share the most recent cash flow projections, incorporating any expected large-event items, such as capital expenditures or acquisitions.
- **Borrowing needs.** If there is an expectation for increased borrowing needs, discuss the issue at the earliest opportunity. By doing so, the bank will have time to evaluate the situation and see if it wants to be involved, or if certain conditions must be met before it will agree to additional borrowings.

Tip: When presenting information to bankers, try hard not to let optimism inflate any projections given to them. Over the course of several meetings, bankers will notice if the company never achieves its projections, and so will tend to discount new forecasts.

In addition, if there have been or are expected to be problems complying with any loan covenants set by the bank, this is the time to discuss them. When addressed in advance, it may be possible to negotiate altered covenants that more closely align with the company's financial circumstances.

Tip: Following each meeting with the bankers, document which information was shared with them. This makes it easier to present information to them in subsequent meetings that dovetails with earlier presentations.

If the treasurer wants to renegotiate some aspects of the banking relationship, such as fees, investment vehicles used, or debt limits, then the strategy for doing so should be formalized in advance, along with fallback positions, if any. This approach is most useful when the fees involved are quite large, since even slight changes in negotiation positions might trigger fee changes of hundreds of thousands of dollars. Only by knowing the cost of each negotiation position can a treasurer conduct a well-reasoned discussion with a bank.

It is reasonable for a cost-conscious treasurer to negotiate better prices from a banking partner. However, consider the impact on the bank. If the bank has been negotiated down to a minimum-profitability situation, it will have little reason to continually renew its lending arrangements with the company, and will be less inclined to be of assistance if the company has an unexpected cash flow issue. Consequently, it is more prudent from a long-term relationship perspective to allow one's bank to earn a sufficiently large profit to give it an active interest in prolonging (if not expanding) its business with the company. In short, it is better to adopt the mindset of treating bankers as partners, rather than suppliers.

There are times when a bank will decide that it wants to terminate its banking relationship. While this may be triggered by a company's deteriorating financial results, it is also possible that the bank is simply reducing its exposure to an industry sector. If so, the key point will be to negotiate the longest-possible transition period, so that the company can make an orderly switch to a new banking partner.

Tip: If a banker gives adequate notice that it is terminating its relationship with the company, respond in a professional manner, since it is possible that relations may recommence at a future date. Conversely, if the banker gives minimal termination notice, the treasurer would be justified in avoiding any future relations with that bank.

The possible loss of a bank is a key concern. It can make sense to maintain relations with multiple banks at once, so that the company can more easily shift its borrowing and other banking activities amongst the group if one bank decides pulls out of the industry.

Bank Account Analysis

Part of any banking relationship is a discussion of the fees being charged for the various types of transactions running through a company's bank accounts. The treasurer should receive from each bank a monthly summary of the fees charged for all account activity for every account. It is worthwhile to scan through these fee summaries to see if there are any unusual fees or inordinately high transaction volumes that require additional investigation. In addition, consider maintaining a list of the original fee structures agreed to with each bank, and compare them to the fees currently being charged, in order to track trends in fee structure. Any unusual items should be brought to the attention of the relationship manager of the bank.

There are a large number of bank account fees that may be charged, with the fee names varying by bank. Here are some of the more common fees:

- Monthly maintenance fee
- ACH credit fee
- ACH debit fee
- ATM access fee
- Cash concentration services fee
- Check images on bank statement fee
- Debit card fee
- Fee per check cashed
- Fee per deposit made
- Inbound wire transfer fee
- Monthly fee to have the capability to issue wire transfers
- Monthly fee to have the capability to make ACH payments
- Outbound wire transfer fee
- Overdraft protection fee
- Remote check deposit fee
- Special reports fee

Chapter Summary

Cash management should be considered one of the core functions of a business, since cash is essentially the fuel that drives the corporate engine. Accordingly, considerable attention should be paid to the amounts and timing of cash inflows and outflows, so that sudden cash shortages can be planned for and hopefully avoided. There are strong arguments in favor of adopting a sophisticated cash management system, but only if a company has the wherewithal and commitment to support this level of detailed involvement in the management of cash.

Cash management involves a considerable amount of day-to-day examination of actual and forecasted cash flows. Without such current knowledge, there is no way to invest excess funds in anything other than the most liquid investments, nor is it possible to properly time the acquisition of new funding from the issuance of debt or the sale of stock. Thus, an integrated system of data collection is needed, which must summarize into a well-maintained cash forecast. In the next three chapters, we deal with the concept of information aggregation, which is the use of data collection systems to create the cash forecast that is so necessary for cash management.

Review Questions

1. A change in credit policy:
    A. Is usually made by the board of directors
    B. Is based on a company's own financial condition
    C. May be driven by an evaluation of the financial condition of business partners
    D. Is the sole responsibility of the controller

2. The cash forecast falls under the _____ area of cash management.
    A. Risk management
    B. Information aggregation
    C. Liquidity management
    D. Recordation

3. Notifying the bank regarding employee terminations is related to:
    A. Bank account maintenance
    B. Debt management
    C. Equity management
    D. Investment management

4. _____ is traditionally considered part of the accounting department.
    A. Cash forecasting
    B. Bank relations
    C. Debt management
    D. Accounts payable

5. The centralization of cash management will <u>not</u> work:
    A. When there is an integrated financial reporting system
    B. When the president insists on central control
    C. When there are inadequate cash flows to support centralization
    D. When all cash flows are located within one country

Review Answers

1. A. Incorrect. The board of directors is not involved with credit policy.
   B. Incorrect. A company's own financial condition does not drive changes in the credit policy.
   C. **Correct.** A change in credit policy may be driven by an evaluation of the financial condition of business partners.
   D. Incorrect. The controller may be consulted regarding credit policy, but may not be solely responsible for it.

2. A. Incorrect. The cash forecast is not part of risk management.
   B. **Correct.** The cash forecast is part of the information aggregation area of cash management.
   C. Incorrect. The cash forecast is not part of liquidity management.
   D. Incorrect. There is no recordation area of cash management.

3. A. **Correct.** The bank must be notified when check signers leave the company.
   B. Incorrect. Debt management is not related to employee terminations.
   C. Incorrect. Equity management is not related to employee terminations.
   D. Incorrect. Investment management is not related to employee terminations.

4. A. Incorrect. Cash forecasting is traditionally considered part of the treasury department.
   B. Incorrect. Bank relations is traditionally considered part of the treasury department.
   C. Incorrect. Debt management is traditionally considered part of the treasury department.
   D. **Correct.** Accounts payable is traditionally considered part of the accounting department.

5. A. Incorrect. An integrated financial reporting system makes it easier to centralize cash management.
   B. Incorrect. A central system of control makes it easier to centralize cash management.
   C. **Correct.** Centralization does not work when there are inadequate cash flows to support the concept.
   D. Incorrect. It is much easier to centralize cash management when cash flows are within one country.

Chapter 2
The Cash Forecast

Learning Objectives

- Recognize aspects of the receipts and disbursements method
- Pinpoint areas in the medium-term cash forecast that will need manual updates
- Identify types of cash forecast information which are considered highly reliable

Introduction

It is impossible to manage cash effectively without an accurate cash forecast. The forecast is designed to give the treasurer insights into the state of cash inflows and outflows over the next few weeks and months. A well-constructed forecast should give the treasury staff sufficient information to ensure that there is enough cash available to meet the ongoing needs of a business on a day-to-day basis. The forecast should be sufficiently reliable for the treasurer to invest funds in somewhat longer-term investments, without being concerned that there will be a sudden need for the cash prior to the maturity dates of the investments.

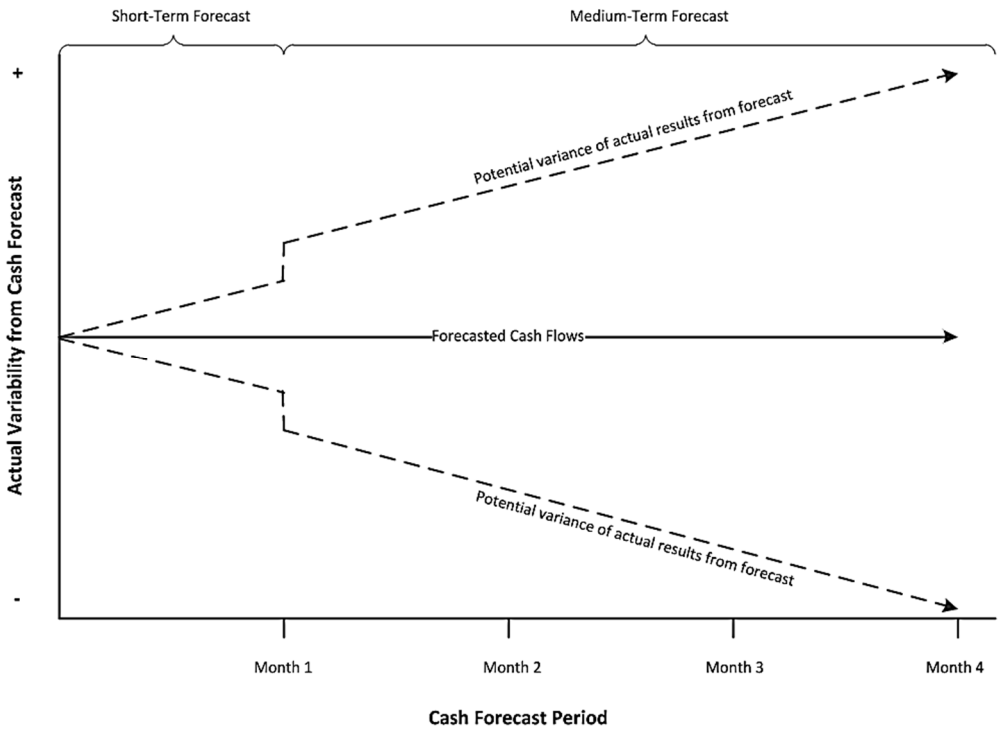
Clearly, it is imperative to have a cash forecast that is completely reliable. In this chapter, we cover the details of how to create such a forecast, the reliability of the source information used within it, and how to improve the document on an ongoing basis.

The Cash Forecast

The treasurer needs to know the amount of cash that will probably be on hand in the near future, in order to make fund raising and investment decisions. This is accomplished with a cash forecast, which should be sufficiently detailed to inform the treasurer of projected cash shortfalls and excess funds on at least a weekly basis. This section covers the details of how to create and fine-tune a cash forecast.

The cash forecast can be divided into two parts: near-term cash flows that are highly predictable (typically covering a one-month period) and medium-term cash flows that are largely based on revenues that have not yet occurred and supplier invoices that have not yet arrived. The first part of the forecast can be quite accurate, while the second part yields increasingly tenuous results after not much more than a month has passed. It is also possible to create a long-term cash forecast that is essentially a modified version of the company budget, though its utility is relatively low. The following exhibit shows the severity of the decline in accuracy for short-term and medium-term forecasts. In particular, there is an immediate decline in accuracy as soon as the medium-term forecast replaces the short-term forecast, since less reliable information is used in the medium-term forecast.

Variability of Actual from Forecasted Cash Flow Information



Through the remainder of this section, we will deal separately with how to construct the short-term and medium-term portions of the cash forecast, along with related topics.

The Short-Term Cash Forecast

The short-term cash forecast is based on a detailed accumulation of information from a variety of sources within the company. The bulk of this information comes from the accounts receivable, accounts payable, and payroll records, though other significant sources are the treasurer (for financing activities), the CFO (for acquisitions information) and even the corporate secretary (for scheduled dividend payments). Since this forecast is based on detailed itemizations of cash inflows and outflows, it is sometimes called the *receipts and disbursements method*.

The forecast needs to be sufficiently detailed to create an accurate cash forecast, but not so detailed that it requires an inordinate amount of labor to update. Consequently, include a detailed analysis of only the *largest* receipts and expenditures, and aggregate all other items. The detailed analysis involves the manual prediction of selected cash receipts and expenditures, while the aggregated results are scheduled based on average dates of receipt and payment (see the comments at the end of this section about the use of averaging).

Tip: Use detailed analysis of cash items in the cash forecast for the 20% of items that comprise 80% of the cash flows, and use aggregation for the remaining 80% of items that comprise 20% of the cash flows.

The following table notes the treatment of the key line items in a cash forecast, including the level of detailed forecasting required.

+/–	Line Item	Discussion
+	Beginning cash	This is the current cash balance as of the creation date of the cash forecast, or, for subsequent weeks, it is the ending cash balance from the preceding week. Do not include restricted cash in this number, since you may not be able to use it to pay for expenditures.
+	Accounts receivable	Do not attempt to duplicate the detail of the aged accounts receivable report in this section of the forecast. However, you should itemize the largest receivables, stating the period in which cash receipt is most likely to occur. All other receivables can be listed in aggregate.
+	Other receivables	Only include this line item if there are significant amounts of other receivables (such as customer advances) for which you expect to receive cash within the forecast period.
–	Employee compensation	This is possibly the largest expense item, so be especially careful in estimating the amount. It is easiest to base the compensation expense on the amount paid in the preceding period, adjusted for any expected changes.
–	Payroll taxes	List this expense separately, since it is common to forget to include it when aggregated into the employee compensation line item.
–	Contractor compensation	If there are large payments to subcontractors, list them in one or more line items.
–	Key supplier payments	If there are large payments due to specific suppliers, itemize them separately. You may need to change the dates of these payments in the forecast in response to estimated cash positions.
–	Large recurring payments	There are usually large ongoing payments, such as rent and medical insurance, which can be itemized on separate lines of the forecast.
–	Debt payments	If there are significant principal or interest payments coming due, itemize them in the report.
–	Dividend payments	If dividend payments are scheduled, itemize them in the forecast; this tends to be a large expenditure.
–	Expense reports	If there are a large number of expense reports in each month, they are probably clustered near month-end. You can usually estimate the amount likely to be submitted.
=	Net cash position	This is the total of all the preceding line items.
+/–	Financing activities	Add any new debt, which increases cash flow, or the reduction of debt, which decreases cash flow. Also add any investments that mature during the period.
	Ending cash	This is the sum of the net cash position line item and the financing activities line item.

The following example illustrates a cash forecast, using the line items described in the preceding table.

EXAMPLE

The controller of Suture Corporation constructs the following cash forecast for each week in the month of September.

+/–	Line Item	Sept. 1-7	Sept. 8-14	Sept. 15-22	Sept. 23-30
+	Beginning cash	$50,000	$30,000	$2,000	$0
+	Accounts receivable				
+	Alpha Pharmaceuticals	120,000		60,000	
+	St. Joseph's Burn Center		85,000		52,000
+	Third Degree Burn Center	29,000		109,000	
+	Other major receivables	160,000	25,000	48,000	60,000
+	Other receivables	10,000		5,000	
–	Employee compensation	140,000		145,000	
–	Payroll taxes	10,000		11,000	
–	Contractor compensation				
–	Bryce Contractors	8,000		8,000	
–	Johnson Contractors	14,000		12,000	
–	Key supplier payments				
–	Chico Biomedical	100,000		35,000	
–	Stanford Research	20,000	80,000	29,000	14,000
–	Other suppliers	35,000	40,000	30,000	48,000
–	Large recurring payments				
–	Medical insurance				43,000
–	Rent				49,000
–	Debt payments		18,000		
–	Dividend payments			20,000	
–	Expense reports	12,000	0	0	21,000
=	Net cash position	$30,000	$2,000	-$66,000	-$63,000
+/–	Financing activities			66,000	63,000
=	Ending cash	$30,000	$2,000	$0	$0

The forecast reveals a cash shortfall beginning in the third week, which will require a cumulative total of $129,000 of additional financing if the company wants to meet its scheduled payment obligations.

The format is designed with the goal of giving sufficient visibility into cash flows to reveal the causes of unusual cash shortfalls or overages, without burying the reader in an excessive amount of detail. To meet this goal, note the use of the "Other receivables" and "Other suppliers" line items in the exhibit. They are used to aggregate smaller projected transactions that do not have a major impact on the forecast, but which would otherwise overwhelm the document with an excessive amount of detail if they were listed individually.

A possible addition to the cash forecast is the use of a *target balance*. This is essentially a "safety stock" of cash that is kept on hand to guard against unexpected cash requirements that were not planned for in the cash forecast. All excess cash above the target balance can be invested, while any shortfalls below the target balance should be funded. If a target balance had been incorporated into the preceding cash forecast example in the amount of $10,000, the amount would have been listed for the week of September 1-7 as a deduction from the ending cash position, leaving $20,000 of cash available for investment purposes.

The model we have outlined in this section requires a weekly update. It only covers a one-month period, so its contents become outdated very quickly. Ideally, you should block out time in the department work schedule to complete the forecast at the same time, every week. Unless you are operating in an extremely tight cash flow environment, we do not recommend daily updates of cash forecasts – the time

required to create these forecasts is excessive in comparison to the additional precision gained from the more frequent updates.

Tip: Do not schedule an update of the cash forecast on a Monday or Friday, since too many of these days involve holidays. Instead, schedule the forecast update on any other business day, thereby increasing the odds of completing a new forecast every week.

The very short-term portion of the cash forecast may be subject to some tweaking, usually to delay a few supplier payments to adjust for liquidity problems expected to arise over the next few days. To incorporate these changes into the forecast, the treasurer may use a preliminary draft of the forecast to coordinate changes in the timing of payments with the controller, and then record the delays in the forecast before issuing the final version.

The Medium-Term Cash Forecast

The medium-term cash forecast extends from the end of the short-term forecast through whatever time period the treasurer needs to develop investment and funding strategies. Typically, this means that the medium-term forecast begins one month into the future.

The components of the medium-term forecast are largely comprised of formulas, rather than the specific data inputs used for a short-term forecast. For example, if the sales manager were to contribute estimated revenue figures for each forecasting period, then the model could derive the following additional information:

- **Cash paid for cost of goods sold items.** Can be estimated as a percentage of sales, with a time lag based on the average supplier payment terms.
- **Cash paid for payroll.** Sales activity can be used to estimate changes in production headcount, which in turn can be used to derive payroll payments.
- **Cash receipts from customers.** A standard time lag between the billing date and payment date can be incorporated into the estimation of when cash will be received from customers.

A possibly more precise method for deriving cash paid for cost of goods sold items is based on the presence of a constraint somewhere in the company's production or administrative systems that chokes the flow of orders. If this bottleneck exists, estimate sales based on the capacity of the constraint; at a minimum, do *not* forecast for cash flows derived from sales that exceed the capability of the constraint, since it is impossible for the system to generate these additional amounts.

The concept of a formula-filled cash forecast that automatically generates cash balance information breaks down in some parts of the forecast. In the following areas, the treasury staff will need to make manual updates to the forecast:

- **Fixed costs.** Some costs are entirely fixed, such as rent, and so will not vary with sales volume. The treasury staff should be aware of any contractually-mandated changes in these costs, and incorporate them into the forecast.
- **Step costs.** If revenues change significantly, the fixed costs just described may have to be altered by substantial amounts. For example, a certain sales level may mandate opening a new production facility. A more common step cost is having to hire an overhead staff position when certain sales levels are reached. The treasury staff should be aware of the activity levels at which these step costs will occur.
- **Seasonal / infrequent costs.** There may be expenditures that only arise at long intervals, such as for the company Christmas party. These amounts are manually added to the forecast.
- **Contractual items.** Both cash inflows and outflows may be linked to contract payments, as may be the case with service contracts. If so, the exact amount and timing of each periodic payment can be transferred from the contract directly into the cash forecast.

The methods used to construct a medium-term cash forecast are inherently less accurate than the much more precise information used to derive a short-term forecast. The problem is that much of the information is derived from the estimated revenue figure, which rapidly declines in accuracy just a few months into the future. Because of this inherent level of inaccuracy, do not extend the forecast over too long a time period. Instead, settle upon a time range that provides useful information for planning purposes. Any additional forecasting beyond that time period will waste staff time to create, and may yield misleading information.

The Long-Term Cash Forecast

There can also be a long-term cash forecast that extends for an additional one or two years past the end of the medium-term forecast. It can be extremely difficult and time-consuming to develop and maintain a sales forecast for this period, so the most common approach is to instead adapt information from the corporate budget, and update it regularly to coincide with management's best estimates of long-term results.

The cash flows indicated by a long-term cash forecast should be considered only approximate values, so the treasury department is probably justified in not using it as the basis for any investment activities having specific maturity dates. However, the long-term forecast may be of more use in dealing with projected cash shortfalls. For lack of any better information, the treasurer can use it to obtain approximations of how much cash may be needed, and to plan on acquiring debt or selling stock to meet the shortfall.

The Use of Averages

There can be a temptation to use averages for estimated cash flows in the cash forecast. For example, it may seem reasonable to divide the average cash collections for receivables in a month by four, and then enter the resulting average cash receipts figure in each week of the forecast. This is not a good idea in the short-term portion of the forecast, since there are a number of timing differences that will make actual results differ markedly from average results. The following bullets contain several cash flow issues that can have sharp spikes and declines in comparison to the average:

- The receipt of payment for an unusually large invoice
- The designation of a large invoice as a bad debt
- Once-a-month payments, such as rent and medical insurance
- Sporadic payments, such as for dividends and property taxes

It is particularly dangerous to use averaging to estimate accounts receivable. In many companies, there is a disproportionate amount of invoicing at the end of each month, which means that there is a correspondingly large amount of cash receipts one month later (assuming 30-day payment terms). In short, it is quite common to have billing surges cause payment surges that vary wildly from average cash receipt numbers.

If a treasurer were to rely upon an averages-based cash forecast, there would be a high risk of routinely having cash shortfalls and overages. After all, the treasurer is responsible for ensuring liquidity *every day*, not just on average. Thus, we strongly recommend against the use of averages when forecasting the larger items in a short-term cash forecast.

The situation is different in a medium-term forecast, since the time period is sufficiently far into the future to make it impossible to predict cash flows with any degree of precision. In this case, the treasurer must estimate based on averages, though with three enhancements:

- Insert specific cash flows that the treasurer is sure of, such as contractually-mandated payments or receipts.
- Insert specific cash flows that have historically proven to be reliable. For example, if a customer has proven to be consistent in paying on a certain day of the month, assume that these payments will continue with the same timing.

- It may be possible to substitute actual cash flow information for averages in the least-distant time periods. This is particularly likely for cash outflows, such as payroll, where there is not a significant amount of change in the amount paid from period to period.

The Use of Clearing Dates in a Forecast

The overall intent of the cash forecast is to give the treasurer the best possible estimate of the amount of cash that is *available for use* on certain dates. This is an important issue, since a company may receive a check payment from a customer on one date, but not have use of the cash until several additional business days have passed. Similarly, the cash represented by an accounts payable check sent to a supplier may still be available to the company for a week or more, since there will be a delay associated with the transit time of the check to the supplier (mail float), as well as any in-house recordation delays at the supplier, and the time required for the check to clear the bank.

These delays in cash availability should be built into the cash forecast, but only if the treasury staff can reliably predict the amount of cash that will be delayed and the duration of the delay. For example, it may be possible to predict the following distribution of checks expected to clear on the days following check issuance, where the distribution is built into the amount of cash disbursed through a check run:

Sample Forecast of Expected Check Clearing

Amount of Checks Issued	Business Days After Check Issuance	Percent Expected to Clear	Amount Expected to Clear	Day
$100,000				Monday
	1	5%	$5,000	Tuesday
	2	25%	25,000	Wednesday
	3	30%	30,000	Thursday
	4	20%	20,000	Friday
	5	15%	15,000	Monday
	6	5%	5,000	Tuesday
		100%	$100,000	

It is easiest to predict a standard number of days delay before deposited cash is made available. It is more difficult to predict the delay for accounts payable checks, since it involves the actions of the postal service and the payee; a conservative approach is to apply a minimum number of days delay to all payments issued.

The timing difference between the clearing date and recordation date is declining, since many companies have turned to electronic payments. In particular, the use of direct deposit for payroll payments means that there is essentially no delay in payments made to employees.

Tip: If it is too complicated to incorporate clearing dates into the cash forecast, at least consider doing so for the largest individual cash inflows and outflows, so that a small amount of additional forecasting effort will still result in better timing accuracy for a significant part of the forecast.

Automated Cash Forecasting

Some accounting software packages include a feature that estimates cash balances in the near future, based on outstanding accounts receivable and accounts payable and when they are supposed to be paid. The feature should be used with caution in cash forecasting, given the following pluses and minuses associated with how they operate:

- **Cash outflow estimates.** The systems can be quite accurate in estimating accounts payable, since they draw upon the mandated payment terms listed in the vendor master file in the accounting system. However, the accounting department must be very good at entering all accounts payable

into the system immediately upon receipt, to ensure that these items are properly reflected in the cash forecast.

- **Cash collection estimates.** Cash receipt estimates will necessarily be less accurate, since customers do not always pay in accordance with the payment terms listed in the customer master file. Also, customer accounts payable departments may be irregular in making payments around major holidays, which an automated system does not account for.
- **Available for use information.** Automated cash forecasting systems project cash balances based on the issuance or receipt of payments, which differ from the availability dates of the underlying checks.
- **Undocumented cash outflows.** Many companies have short-term cash outflow requirements related to fixed asset purchases, legal settlements, acquisitions, and so on that are not entered into the accounts payable system until the day when payment is to be made. These payments can unexpectedly alter the results of an automated system by a substantial amount.

Tip: It is easier to automate the cash forecast when suppliers send their invoices directly to the accounts payable department, rather than to their contacts elsewhere in the company, thereby shortening the time required to record the invoices. Better yet, have suppliers submit their invoices through an on-line interface, so that payables are included in the forecasting model as early as possible.

An automated system that relies upon accounts payable to determine cash outflows is probably only accurate through a time period of about two to three weeks. To extend the accuracy of the forecast, consider routing requests for all larger purchases through the purchasing department; doing so allows for the creation of purchase orders that incorporate pricing and delivery dates, which can then be integrated back into the cash forecast. The result should be a cash forecast whose cash outflow information is accurate for a few more weeks into the future.

Given these issues, the treasury staff will likely need to modify the results provided by an automated cash forecasting system, especially in regard to projected cash receipts from customers. For medium-term forecasts, the detailed cash receipt and disbursement information used by these systems is not available, rendering them much less effective.

The Reliability of Cash Flow Information

After building cash forecasts for a few months, it will become apparent that certain information is highly reliable, while other types of information vary considerably from expectations. It is useful to identify which types of information are *least* reliable, so that the most time can be spent monitoring them. Highly reliable information can be copied forward into successive versions of the cash forecast with minimal cross-checking. The following bullet points note the reliability of different types of cash flow information:

Cash Flow Item	Reliability	Comments
Cash Inflows		
Credit sales	Average	If there are many small invoices, it should be possible to calculate the time periods within which certain proportions of all billed invoices will be paid. The situation is more dire if there are a few large invoices, since reliability is subject to the whims of a few customers. Timing is particularly problematic for payments coming from international customers, since there are more ways in which payments can be held up in transit.
Investments	Very high	If an investment has a specific maturity date, the related cash receipt can be scheduled with high confidence.

Cash Flow Item	Reliability	Comments
Cash Outflows		
Payroll	High	If a company uses a third party payroll supplier, the full amount of the payroll will be extracted from the company's account on a specific date. If payroll is handled in-house and especially with check payments, then the reliability of payments will be high within a period of a few days.
Suppliers	High	The payment dates for supplier payments are based on negotiated payment terms, which make the reliability of this information quite high. The reliability can be eroded if there are payment disputes with suppliers that delay payments.
Income tax payments	Varies	Quarterly income tax payments can be based on prior year payments, and so are very predictable. However, the final annual payment is based on annual net profits, which may be considerably less predictable.
Other tax payments	High	Sales tax remittances are usually compiled several weeks in advance, and can also be predicted as a percentage of sales.
Dividends	Very high	The amount and timing of dividends are determined several months in advance by the board of directors.
Debt payments	Very high	Debt repayment schedules are usually quite rigidly enforced. The lender may even use an ACH debit to extract debt payments from the company's bank account on specific dates.

The preceding table points out that the credit sales component of cash inflows can have the most problematic reliability. Thus, this is likely to be the area in which the treasury staff should focus its attention when developing a cash forecast.

Information used in the forecast is more likely to be unreliable when it is manually forwarded from another department. These other departments have no stake in the accuracy of the cash forecast, and so are less concerned with forwarding information that is accurate in terms of both cash amounts and payment or receipt timing. The following are all possible techniques for improving the reliability of such information:

- Develop a data entry system that forwards the information. When there is a formal system for entering the required information, as well as a supporting procedure, it is more likely to yield more reliable information.
- Design a bonus system that rewards targeted individuals for the accuracy of the information they forward to the treasury department, and penalizes them for unreliable information.
- The treasury department can be given formal responsibility over the area that produces the information. This is a drastic step, since it smacks of empire building.
- Make presentations to the various departments to impart to them the importance of providing reliable information. This approach tends to have a good short-term impact, but then fades over time.
- Change the underlying processes to circumvent the departments providing information. For example, if cash receipts forecasts from the sale of assets were coming from the individual departments selling the assets, consider centralizing this task with the purchasing department.

The Impact of Special Events

There are a number of special events that can have a profound (and usually negative) impact on the cash forecast. From the perspective of cash management, it is critical to identify these events and incorporate them into the cash forecast as early as possible. Doing so improves the likelihood that sudden cash shortages can be avoided. Here are several examples of special events that can impact cash flows:

- **Commodity price spikes.** The price of a key commodity suddenly increases, and the company is unable to pass the increase through to its customers. This will cause a significant jump in cash outflows in 30 days, when supplier invoices are due for payment. This will impact the transitional period in the cash forecast between the end of the short-term forecast and the start of the medium-term forecast.

- **Competing product introduction.** A competitor unexpectedly introduces an excellent competing product at a low price point, which immediately drives down the company's market share. This will impact the medium-term cash forecast, as sales drop and cash inflows decline.
- **Supply chain disruption.** A flood destroys a key supplier facility. It will take three months to mitigate the supply chain damage. In the meantime, existing buffer stocks of finished goods will be drawn down and sales will then terminate for all goods containing the parts provided by the supplier. This will not impact the short-range cash forecast, but may trigger a massive decline in cash inflows from customers over the medium term.
- **War.** An insurgency impacts deliveries into a key market in the Middle East, cutting off the company from its distributors. All sales are expected to cease until the insurgency can be put down. This will certainly impact the medium-term forecast, and may even roll into the short-term forecast, if the impacted distributors cannot make payments on outstanding invoices.

These examples of special events all impact the cash forecast to a major extent. It is entirely possible that a business may be subjected to at least one of these events every year or so. Given the reasonable probability of these occurrences, it is of some importance to maintain strong lines of communication with everyone in the company who is most likely to be best informed about these events. This means having ongoing discussions with the purchasing manager to understand changes in the supply chain, as well as with the sales manager to learn firsthand what is happening with the company's products and distribution systems. This enhanced level of communication allows for the more rapid inclusion of special events in the cash forecast.

Tip: Include in the forecasting procedure a requirement to contact the purchasing and sales managers for updates on special events. Otherwise, this investigation will likely be forgotten.

Cash Forecasting Documentation

There are several source documents from which cash forecasting information is extracted, such as the aged accounts receivable report and the aged accounts payable report. The treasury staff should use a standard checklist of these source documents to find the information it needs to update the cash forecast. As long as the same checklist is used to compile every forecast, there should be no need to store the supporting documentation, for several reasons. First, forecasts may be updated frequently, so creating a documentation package for each one is excessively burdensome. Second, the treasury staff may shift the timing of anticipated cash flows "on the fly," based on their best estimates; it is too time-consuming to document the reasons for each of these timing changes. A treasurer who has been promoted into the position from the accounting side of a business may be uncomfortable with this minimal level of documentation, since the accounting staff is accustomed to more rigorous documentation standards.

The Foreign Currency Cash Forecast

The cash forecast is particularly useful when a company deals with large amounts of foreign currency. In these cases, consider maintaining a separate cash forecast for each foreign currency. By doing so, it is much easier to identify possibly excessive exposures to large foreign currency holdings or payment requirements, which may trigger a variety of hedging activities.

Tip: It may be possible to develop a consolidated cash forecasting system that is comprised of separate foreign currency forecasts that roll up into a corporate-level forecast.

The Cash Forecasting Procedure

It is critical to have a consistently-applied process for generated a cash forecast, so that the treasury department can develop reliable cash balance information. This calls for a procedure similar to the one shown below.

1. **Prepare forecast template.** Create a copy of the last cash forecast. Prepare the forecast with the following information:
   - Extend the forecast to cover the new forecast period
   - Delete from the forecast any dates that are now in the past
   - Label the spreadsheet with the forecasting date
   - Clear all numbers from the forecast line items

> **Tip:** If you are calculating the cash forecast on an electronic spreadsheet, copy the most recent version of the forecast onto a new tab, and label the tab with the date of the forecast. This allows you to keep a historical record of all prior cash forecasts.

2. **Populate the template.** Enter the following information into the cash forecast template for each designated time bucket:
   - Current cash balance
   - The best estimate of cash receipts from open accounts receivable
   - The projected cash disbursements for payroll and payroll tax payments
   - The projected cash disbursements for accounts payable
   - The projected timing of expenditures for capital projects
   - The projected timing of dividend payments
   - If the cash forecast extends beyond the period covered by the current group of accounts receivable, estimate the cash receipts from new sales that will arrive during the cash forecast period. The timing of these receipts will likely be based on the company's experience with the timing of cash receipts from the customers to whom sales are expected to be made.
   - If the cash forecast extends beyond the period covered by the current group of accounts payable, estimate the cash disbursements related to the cost of goods sold and normal selling and administrative expenses during the relevant cash forecast periods.

   Another use of cash that may be included in the cash forecast is that portion of an expected acquisition paid for with cash.

> **Tip:** Compile a checklist of all the sources of information for the cash forecast and use it every time a new forecast version is compiled, to ensure that every issue impacting cash is included.

3. **Review and revise the forecast.** Print an initial copy of the forecast and review it for reasonableness. If any cash inflows or outflows appear to be unusual, confirm them with the person who compiled the information. It may be necessary to avoid funding shortfalls by shifting planned expenditures further into the future, which usually requires a discussion with the controller. This review and revision process can require several iterations.

> **Tip:** A good way to detect flaws in a forecast is to compare the cash flow results for each forecast period to the results predicted for the same periods in the preceding cash forecast, and to investigate any large differences.

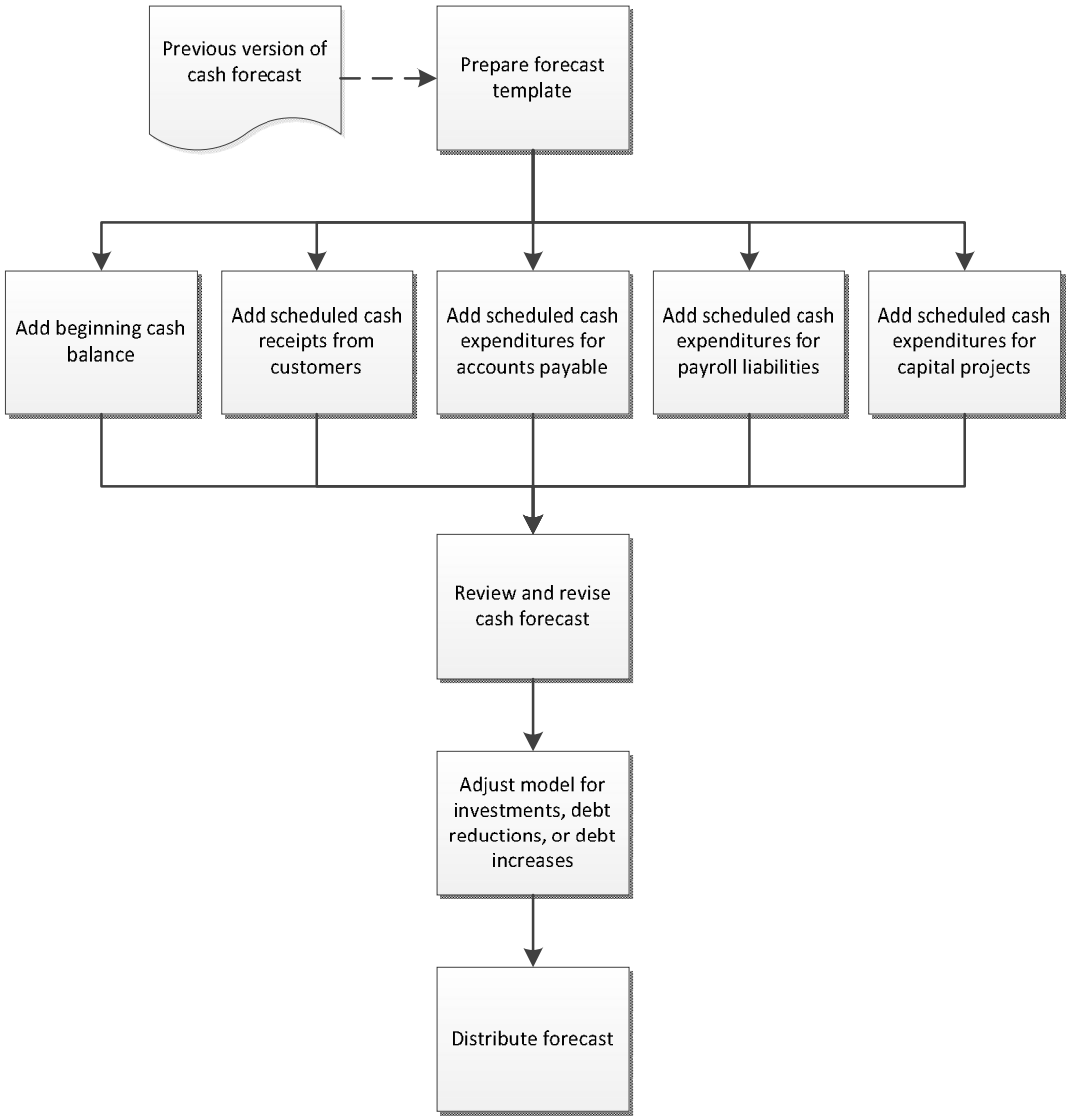
4. **Adjust for funding changes.** If the cash forecast indicates that the company can invest funds or must borrow to meet expenditure requirements, discuss these issues with the treasurer. Incorporate into the forecast any cash withdrawals for new investments or the reduction of loans. Also make note of any loan drawdowns needed to fund forecasted cash requirements.
   Control issues: Consider having the treasurer formally approve the final version of the cash forecast, since the treasurer will likely be held accountable if the forecast turns out to be flawed.

> **Tip:** It may be useful to note on the forecast the projected remaining borrowing base against which the company can draw down funds from its line of credit. This is useful for planning when to obtain additional debt.

5. **Distribute the forecast.** Send copies of the forecast to all parties on the distribution list, such as the controller and chief financial officer.
   Control issues: If the cash forecast is distributed by e-mail, consider issuing it as a locked spreadsheet or a PDF document, so the recipients do not make changes to the information. Also, lock down the spreadsheet model so that it is not inadvertently modified within the treasury department.

   The following exhibit shows a streamlined view of the cash forecasting procedure.

Cash Forecasting Process Flow



Cash Forecast Reconciliation

No matter how excellent a job the treasury staff may do in constructing a cash forecast, the result will never exactly match actual results. Either the amount or timing of actual cash inflows and outflows will differ from the prediction. Because of these differences, the people responsible for generating each cash forecast should routinely conduct a forecast reconciliation. The reconciliation should encompass the following activities:

- Investigate items that were expected to occur, but which did not
- Investigate items that were entirely unanticipated, or which were accelerated

- Investigate items that occurred in unanticipated amounts

The result can be a formal reconciliation document, but the main point is for the cash forecast preparers to gain experience with any permutations in the company's cash flows. The gradual accumulation of knowledge about such matters as the speed with which certain business partners pay the company or cash its checks is key to the improvement of cash forecasts.

Tip: The best time to conduct a cash forecast reconciliation is immediately prior to generating the next forecast, so that any identified issues can be immediately incorporated into the next forecast.

There may be rare cases where the reconciliation process uncovers a check payment that was fraudulently issued. Though these occasional discoveries may qualify the cash forecast reconciliation as a weak detective control, it is not designed to be a control. Consequently, do not incorporate into the reconciliation a detailed investigation of the nature of every check paid by the business. Instead, the focus should be on improving the accuracy of the forecast.

Chapter Summary

It can take several months to achieve a forecasting process that generates reliable cash forecasts. It is not sufficient to reach this level of success and then move on to other projects. Instead, build review systems that constantly monitor forecasts to see if accuracy levels start to decline, and use this information to correct the forecasting model at once. This high level of watchfulness is needed in every company, since the alteration of company systems that is triggered by new lines of business, new software, acquisitions, and so forth will eventually alter the inputs to the cash forecast, making its results less reliable.

Review Questions

1. A long-term cash forecast is based on:
    A. Transactions currently in process
    B. A modified version of the budget
    C. Receipts and disbursements
    D. Formulaic extensions of the short-term forecast

2. The target balance concept:
    A. Keeps debt levels from exceeding a certain trigger point
    B. Assumes that receivables will be collected after a certain number of days
    C. Triggers the drawdown of a line of credit
    D. Is used to keep extra cash on hand

3. The use of cash flow averages is most appropriate:
    A. In a short-term forecast
    B. Under no circumstances
    C. In a medium-term forecast
    D. For the prediction of receivable collections

4. The accounts payable forecast can be extended:
    A. By integrating purchase orders into the cash forecast
    B. By having suppliers route invoices through their company contacts
    C. Through the use of formula extensions
    D. For several additional months

5. You should list the borrowing base on a cash forecast:
    A. For planning the addition of more debt
    B. Only for long-term forecasts
    C. Only when there is excess cash available for investment
    D. Under no circumstances, since this is confidential information

Review Answers

1. A. Incorrect. Transactions currently in process are used for a short-term cash forecast.
   B. **Correct.** A long-term cash forecast is based on a modified version of the budget.
   C. Incorrect. Receipts and disbursements are used for a short-term cash forecast.
   D. Incorrect. Formulaic extensions of the short-term forecast are used for the medium-term cash forecast.

2. A. Incorrect. The restriction of debt levels is not related to the target balance.
   B. Incorrect. Days receivables outstanding does not relate to the target balance.
   C. Incorrect. The use of a line of credit is not related to the target balance.
   D. **Correct.** The target balance is a minimum amount of cash to keep on hand.

3. A. Incorrect. Cash flow averages should not be used in a short-term forecast.
   B. Incorrect. Averaging can be used for longer-term forecasts.
   C. Correct. Cash flow averages can be used in a medium-term forecast.
   D. Incorrect. Averaging should never be used to predict receivable collections.

4. A. **Correct.** The information on purchase orders can be used to extend the accounts payable forecast.
   B. Incorrect. Having suppliers route invoices through their company contacts reduces the duration of the forecast.
   C. Incorrect. Formula extensions do not yield an accurate extension of the payables forecast
   D. Incorrect. The accuracy of the short-term forecast can only be extended by a few weeks.

5. A. **Correct.** The remaining available borrowing base is used to derive the remaining amount of debt available on a company's line of credit.
   B. Incorrect. The borrowing base can be listed on a cash forecast of any duration.
   C. Incorrect. No borrowing base documentation is needed when there is excess cash available, since no debt will be used.
   D. Incorrect. The amount of a borrowing base is not considered confidential information.

Chapter 3
The Bank Reconciliation

Learning Objectives

- Discern the purpose of bank reconciliations from a cash management perspective
- Spot the primary difference between the bank and book balances in a bank reconciliation
- Identify the purpose for a proof of cash
- Recognize a reconciliation problem associated with voided checks

Introduction

A bank reconciliation involves the comparison of a bank's record of the transactions passing through a company bank account to those recorded by the company, to identify and adjust for any differences between the two. This can be a major issue, since *not* reconciling the books for several months introduces the very real prospect that the cash balance a company thinks it has does not resemble its actual balance, and so can interfere with cash investing and forecasting activities.

This chapter explains how to complete a bank reconciliation in a consistent and reliable manner, as well as several problems that are commonly found during reconciliations.

The Bank Reconciliation

From a cash management perspective, it is extremely important to complete a bank reconciliation for every account that contains a significant amount of cash. This is needed to obtain an understanding of the types and timing of cash flows and the unrecorded transactions that can arise, as well as to ensure that the company's cash balance information is correct. The result of a rigorous bank reconciliation process is reliable cash balance information that can be used for cash forecasting and investment activities.

A likely outcome of the reconciliation process will be several adjustments to a company's recorded cash balance. It is extremely unlikely that a company's ending cash balance and the bank's ending cash balance will be identical, since there are probably multiple payments and deposits in transit at all times, as well as bank service fees, penalties, and not sufficient funds deposits that the company has not yet recorded.

The essential process flow for a bank reconciliation is to start with the bank's ending cash balance (known as the *bank balance*), add to it any deposits in transit from the company to the bank, subtract any checks that have not yet cleared the bank, and either add or deduct any other reconciling items. Then find the company's ending cash balance and deduct from it any bank service fees, NSF checks and penalties, and add to it any interest earned. At the end of this process, the adjusted bank balance should equal the company's ending adjusted cash balance.

The following bank reconciliation procedure assumes that the bank reconciliation is being created in an accounting software package, which makes the reconciliation process easier:

1. Enter the bank reconciliation software module. A listing of uncleared checks and uncleared deposits will appear.
2. Check off in the bank reconciliation module all checks that are listed on the bank statement as having cleared the bank.
3. Check off in the bank reconciliation module all deposits that are listed on the bank statement as having cleared the bank.
4. Enter as expenses all bank charges appearing on the bank statement, and which have not already been recorded in the company's records.
5. Enter the ending balance on the bank statement. If the book and bank balances match, then post all changes recorded in the bank reconciliation, and close the module. If the balances do *not*

match, then continue reviewing the bank reconciliation for additional reconciling items. Look for the following items:

- Checks recorded in the bank records at a different amount from what is recorded in the company's records.
- Deposits recorded in the bank records at a different amount from what is recorded in the company's records.
- Checks recorded in the bank records that are not recorded at all in the company's records.
- Deposits recorded in the bank records that are not recorded at all in the company's records.
- Inbound wire transfers from which a lifting fee has been extracted.

EXAMPLE

Suture Corporation is closing its books for the month ended April 30. Suture's controller must prepare a bank reconciliation based on the following issues:

1. The bank statement contains an ending bank balance of $320,000.
2. The bank statement contains a $200 check printing charge for new checks that the company ordered.
3. The bank statement contains a $150 service charge for operating the bank account.
4. The bank rejected a deposit of $500 due to not sufficient funds, and charges the company a $10 fee associated with the rejection.
5. The bank statement contains interest income of $30.
6. Suture issued $80,000 of checks that have not yet cleared the bank.
7. Suture deposited $25,000 of checks at month-end that were not deposited in time to appear on the bank statement.

The controller creates the following reconciliation:

		Item #	Adjustment to Books
Bank balance	$320,000	1	
- Check printing charge	-200	2	Debit expense, credit cash
- Service charge	-150	3	Debit expense, credit cash
- NSF fee	-10	4	Debit expense, credit cash
- NSF deposit rejected	-500	4	Debit receivable, credit cash
+ Interest income	+30	5	Debit cash, credit interest income
- Uncleared checks	-80,000	6	None
+ Deposits in transit	+25,000	7	None
= Book balance	$264,170		

When the bank reconciliation process is complete, print a report through the accounting software that shows the bank and book balances, the identified differences between the two (most likely to be uncleared checks), and any remaining unreconciled difference. Retain a copy of this report for each month, since the outside auditors will want to see them as part of the year-end audit.

The format of the report will vary by software package; a simplistic layout follows.

Sample Bank Reconciliation Statement

For the month ended March 31, 20x3		
Bank balance	$850,000	
Less: Checks outstanding	-225,000	See detail
Add: Deposits in transit	+100,000	See detail
+/- Other adjustments	0	
Book balance	$725,000	
Unreconciled difference	$0	

The standard approach to bank reconciliations is to complete them for all accounts shortly after the end of each month, since the reconciliations are derived from the bank statements that are issued after month-end.

The Daily Bank Reconciliation

The procedure for the monthly bank reconciliation that was just outlined is the standard approach – in terms of its timing. An alternative is to conduct a *daily* bank reconciliation, which is based on the daily transactions posted by a bank on its website. By having someone complete a daily reconciliation, it is possible to immediately identify unrecorded incoming cash, which can be factored into the cash forecast. In addition, any unusual or unauthorized transactions impacting a cash account can be investigated at once. For example, if a third party fraudulently removes cash from an account with an ACH debit, the company can immediately institute a debit block to keep any additional debits from impacting the remaining cash.

The procedure to be followed for a daily bank reconciliation is essentially the same as the one just noted for a monthly reconciliation. We recommend completing it at the beginning of each work day, which makes it easier to contact the bank to discuss and take corrective action regarding any anomalies found. Also, completing this chore early makes it easier to reliably check off the department work list, before other issues take up the remaining time available.

Tip: Completing a daily bank reconciliation makes it easier to close the books and issue reliable financial statements, since there are unlikely to be many reconciling items left to investigate by the end of the month.

The Proof of Cash

A proof of cash is essentially a roll forward of each line item in a bank reconciliation from one accounting period to the next, incorporating separate columns for cash receipts and cash disbursements. It is more complicated than a bank reconciliation. However, it provides a greater degree of detail, and so makes it easier to locate errors than a bank reconciliation. Thus, it may be cost-effective to use a proof of cash when you expect to find a large number of different cash-related errors within an accounting period.

The columns (and formula) used for a proof of cash are:

Beginning balance + Cash receipts in the period - Cash disbursements in the period
= Ending balance

When used for each line item in a bank reconciliation, the proof of cash highlights areas in which there are discrepancies, and which may therefore require further investigation, and probably some adjusting entries. Examples of these discrepancies are:

- Bank fees not recorded
- Not sufficient funds checks not deleted from the deposit records
- Interest income or expense not recorded
- Checks or deposits recorded by the bank in different amounts than what they were recorded by the company
- Checks cashed that the company voided
- Cash disbursements and/or receipts recorded in the wrong account

A proof of cash can also uncover instances of fraud. If there is a difference between the totals, it can indicate the presence of unauthorized borrowings and repayments within the time period covered by a single bank statement. For example, if an employee were to illegally withdraw $10,000 from the company accounts near the beginning of the month for his personal use and replace the funds before the end of the month, the issue would not appear in a normal bank reconciliation as a reconciling item. However, a proof of cash would be more likely to flag the extra cash withdrawal and cash return.

Cash Overdrafts

A cash overdraft is a bank account that contains a negative balance. This situation typically arises when an entity is too optimistic in assuming that deposited funds have cleared the bank and are available for use, and so writes checks for which funds are not yet available. The situation may also occur when a bank reconciliation is not properly updated, resulting in the belief that there is more cash in a bank account than is really the case. For example, a company treasurer believes there is $50,000 in a checking account, but due to a reconciliation error, the actual amount is only $20,000. The treasurer then creates a check for $35,000, which results in a cash overdraft of $15,000.

The cash overdraft situation arises when a bank accepts presented checks, despite the lack of cash in the account on which the checks are drawn, and advances funds into the account to cover the shortfall. The funds must be repaid within a stated period of time, and the bank will charge a high interest rate for the funds used, as well as a large overdraft fee.

If a company is in a cash overdraft situation as of the end of its reporting period, it should record the amount of the overdraft as a short-term liability. Since interest is charged, a cash overdraft is technically a short-term loan.

A variation on the concept is when the bank shifts funds from another company account to cover the amount of the overdraft. In this case, there is no loan from the bank, though an overdraft fee is still charged to transfer the required amount of funds. If so, the treasurer must remember to shift the funds in the company's accounting records from the source account to the target account to match the movement of cash enacted by the bank.

Bank Reconciliation Problems

There are several problems that continually arise as part of a bank reconciliation. They are:

- **Uncleared checks that continue to not be presented.** There will be a residual number of checks that either are not presented to the bank for payment for a long time, or which are never presented for payment. In the short term, treat them in the same manner as any other uncleared checks - just keep them in the uncleared checks listing in the accounting software, so they will be an ongoing reconciling item. In the long term, you should contact the payee to see if they ever received the check; you will likely need to void the old check and issue them a new one.
- **Checks clear the bank after having been voided.** As just noted, if a check remains uncleared for a long time, you will probably void the old check and issue a replacement check. But what if the payee then cashes the original check? If you voided it with the bank, the bank should reject the check when it is presented. If you did *not* void it with the bank, then record the check again in the accounting records, which will reduce the cash balance. If the payee has not yet cashed the replacement check, void it with the bank at once to avoid a double payment. Otherwise, you will need to pursue repayment of the second check by the payee.
- **Deposited checks are returned.** There are cases where the bank will refuse to deposit a check, usually because it is drawn on a bank account located in another country. In this case, reverse the original entry related to that deposit, which will reduce the cash balance.

Chapter Summary

The bank reconciliation is an important insurance policy for the treasurer who does not have large cash balances to work with, and so needs to know the exact amount of available cash every day. Even in a company with massive cash balances and minimal investing activities, it still makes sense to use bank reconciliations to identify and record expenses that might otherwise pile up for many months and eventually result in a fairly large adjusting entry.

Review Questions

1. A lifting fee:
    A. Is charged by the accounting software vendor for every bank reconciliation processed
    B. Is a fee charged to the recipient of a wire transfer
    C. Is an interest charge on deposits in transit
    D. Is a charge placed on every check deposited through a lock box

2. An adjustment arising from a bank reconciliation probably does not include:
    A. A reduction for excess interest income
    B. An overdraft penalty
    C. A not sufficient funds fee
    D. A bank service fee

3. If the normal bank reconciliation process still results in a variance, a possible cause is:
    A. A footing total on the bank statement
    B. An error in the bank reconciliation module
    C. Checks recorded in the bank records at a different amount from what is recorded in the company's accounts
    D. An NSF charge was reversed

4. A daily bank reconciliation is useful for:
    A. Hedging currency positions
    B. Verifying that the bank is posting information on its website correctly
    C. Training the cash management staff
    D. Detecting unauthorized transactions

5. A proof of cash is useful for:
    A. Uncovering unauthorized borrowings and repayments within the period covered by a single bank statement
    B. Improving the efficiency of the reconciliation process
    C. Improving the level of control over cash receipts
    D. Tracking bills and coins

Review Answers

1. A. Incorrect. Software vendors do not charge for bank reconciliations processed.
   B. **Correct.** A lifting fee is a fee charged to the recipient of a wire transfer.
   C. Incorrect. There is no interest charge on deposits in transit.
   D. Incorrect. There is a charge for checks deposited through a lock box, but it is not called a lifting fee.

2. A. **Correct.** There should be no excess interest income to reduce.
   B. Incorrect. An overdraft penalty is a common adjustment.
   C. Incorrect. A not sufficient funds fee is a common adjustment.
   D. Incorrect. A bank service fee is a common adjustment.

3. A. Incorrect. Bank statements are automatically generated, and so are unlikely to contain footing errors.
   B. Incorrect. The software used for bank reconciliation modules should not contain errors causing reconciliation problems.
   C. **Correct.** Checks may be recorded in the bank records at a different amount than what is recorded in the company's accounts.
   D. Incorrect. Banks do not typically reverse NSF charges.

4. A. Incorrect. An accurate cash balance is needed for currency hedging, but there is not a direct relationship between hedging and daily reconciliations.
   B. Incorrect. A bank can be expected to reliably post accurate account information to its website.
   C. Incorrect. The cash management staff hardly requires reconciliation training on a daily basis.
   D. **Correct.** A daily reconciliation allows you to take immediate action if an unauthorized transaction is spotted.

5. A. **Correct.** A proof of cash can uncover unauthorized borrowings and repayments within the period covered by a single bank statement.
   B. Incorrect. It takes longer to complete a proof of cash than a bank reconciliation.
   C. Incorrect. The proof of cash is not directly related to cash receipts, and so has no control impact on it.
   D. Incorrect. The proof of cash is designed for reconciliations, not for the physical tracking of bills and coins.

Chapter 4
Cash Management Information Requirements

Learning Objectives

- Discern how frequently it is necessary to track foreign exchange exposure
- Recognize an aspect of supply chain financing
- Determine the purpose of the Internet lock out feature
- Identify a procedures which can help to offset the cost of a treasury management system

Introduction

A large amount of information is needed for the treasury department to effectively manage cash. This can involve forecasts, budgets, real-time data feeds, bank balances, aggregated foreign exchange positions, and so on - there are many sources of information, each with varying levels of reliability. In this chapter, we address the nature of each type of information needed for cash management, and suggest ways to collect, analyze, and report on the information. We also cover such related topics as information system controls, accounting, and reporting requirements.

Cash Transfers

It is occasionally necessary for the treasury staff to initiate a wire transfer to a third party. If so, it is not considered safe from a security perspective to fax, phone, or e-mail the information to the company's representative at the bank. Instead, the company should access the bank's secure on-line system over the Internet and enter the information directly into that system. By doing so, there is much less chance of an unauthorized person intercepting the information. A high level of security is needed for the wire transfer function, since someone could use the information to authorize a large transfer of funds out of the company's bank accounts.

A company may want to initiate ACH payments to suppliers and employees. If so, this service is available through the on-line systems of many banks. As was the case with wire transfers, this access is password-protected, since someone could use the ACH system to transfer funds away from the company.

Purchase and Sale Transactions

If the treasury staff is routinely engaging in the purchase or sale of securities for investment purposes, debt issuances, or the trading of foreign exchange, it should have an on-line system for doing so directly. If these purchase and sale transactions are relatively uncommon, it should be sufficient to place orders through a third party, which provides the company with confirming transaction receipts.

If the company obtains access to its own purchase and sale system, the system should offer straight-through processing (STP). STP encompasses the complete set of actions required to buy or sell, from transaction initiation to settlement.

If there is an in-house purchase and sale capability, and the company uses the system exclusively, this also means that the system is tracking information about the company's entire portfolio of investments, foreign exchange holdings, and debt, which in turn can be used for reporting purposes and for "what if" scenario modeling. This portfolio information may include:

- Investment positions
- Dividend payment dates
- Bond and commercial paper issuances
- Credit line activity
- Intercompany loans

Liquidity Tracking

The treasury staff should have excellent visibility into how cash is currently invested within the company, when cash will become available from the liquidation of assets, and when more cash will be needed for additional asset investments. It is very unlikely that all of this information will be aggregated into a single system. Instead, it will probably be necessary to rely upon an amalgamation of information systems that may include the following:

- **Budget.** The budget is not a particularly accurate document, when viewed from the short-term perspective of investing funds. However, it can be useful for longer-term planning, such as when to obtain more debt or equity funding. The document is especially useful when it is updated on a rolling basis, so that budget information is being updated every month or quarter. If the budget is to be closely integrated into treasury planning, be sure to confirm its relevance with the CFO; many budgets were too optimistic to begin with, and continue to bear little resemblance to actual needs as time goes by.
- **Operations forecast.** A much better document for cash management purposes is the short-term forecast, which estimates sales and expenditures for the next month or so. If updated continually, this document provides the best possible information about likely cash flows in the near future. This is typically spreadsheet-based, but can be a feature in a treasury management system (TMS) that is integrated with investing and other activities.

  Tip: A key information requirement is to retain older versions of forecasts, to compare actual results to forecasted results.

- **Account balances.** The treasury staff may need to manually contact banks to obtain cash balance information. This tedious chore can be eliminated with a TMS, which uses a custom interface to extract the necessary information from banks. When this information is made available from multiple banks, it is known as *multi-bank reporting*. A custom interface can also extract from banks the information related to individual transactions. It is also possible to download information about transactions occurring during the current day, which are called *intraday transactions*.
- **Netting.** The company's various foreign exchange positions can be combined to arrive at net positions, after inter-company transactions have been eliminated and inflows and outflows to and from business partners have been combined. This is a difficult manual task, unless a TMS is available that can delve into the company's accounting systems, extract the necessary information, and present it automatically to the treasury staff.

Interest Income

If a company uses either physical sweeping or notional pooling (see the Cash Concentration Systems chapter), there should be a system in place for allocating the resulting interest income from invested cash back to the subsidiaries that own the cash. This system should track the amount of cash loaned to corporate headquarters by the subsidiaries through the cash concentration system, and calculate the interest income allocation. This reporting system should provide for a significant amount of verifiable documentation, since the information may be reviewed by tax auditors.

Interest income allocation information may have to be compiled manually, though a bank that provides notional pooling services can generate a report showing the allocation. Also, a treasury management system can track this information automatically and generate the necessary reports.

Mark to Market Tracking

When a company invests funds, it is entirely likely that it plans to liquidate the investments prior to their maturities for a profit. If so, the accounting standards state that these investments are to be accounted for as trading securities. A trading security must be marked to market at the end of each accounting period, which means that its recorded value is adjusted to reflect its current market price.

By far the simplest way to record mark to market transactions is via the electronic spreadsheet. This means manually transferring the closing price of each security as of the end of each reporting period into the spreadsheet, multiplying each price by the number of securities held, comparing the result to the total from the last reporting period, and recording the change in the accounting records. This approach represents a minimal level of investment in technology, but is also subject to clerical error.

An alternative that continues to minimize the technology investment, but which should improve accuracy, is to outsource the management of the company's investment portfolio to a third party. This outside money manager provides a period-end investment report to the company that includes ending market values. This latter approach may be considered by the company's outside auditors to be independent evidence of market values, though they will probably trace the ending prices to other independent sources, as well.

The most expensive technology alternative for mark to market tracking is to subscribe to a securities price data feed, and incorporate this information directly into the company's investment tracking system. While the results will be accurate, the cost of the feed and the customized reporting will be substantial.

Foreign Exchange Exposure Tracking

The tracking of a company's exposure to foreign exchange fluctuations requires that there be current knowledge of current foreign exchange positions. The available information should include:

- The business unit with foreign exchange exposure
- The amount and type of foreign currency
- The dates when foreign currency must be sold or bought
- The identity of the counterparty
- Intercompany netting

In many organizations, it is extremely difficult to obtain this information, especially when the accounting systems operated by subsidiaries are not integrated into a company-wide system. A common result is a wait of a week or more following month-end to find out what the company's aggregate foreign exchange exposure was at the end of the month. Clearly, such systems are inadequate when hedging decisions must be made on a daily basis.

Tip: The tracking of hedges with an electronic spreadsheet is subject to error. A better alternative is to buy the hedge tracking module of a treasury management system, which is less likely to produce a hedge tracking error.

It is possible to cobble together interfaces with disparate systems to obtain the required foreign exchange information, but the interfaces must be custom-built and continually updated in the face of ongoing software upgrades in the various systems. An equally expensive option, but one that is technically more streamlined and easily maintained is to require the installation of an enterprise resources planning (ERP) system throughout all company locations. An ERP system is the central repository of all information required to operate a business. At the cost of a very expensive ERP system and a more expensive installation price tag, it is possible to obtain ready access to the necessary information about foreign exchange positions.

Tip: Any separate tracking of foreign exchange positions by a subsidiary should not be allowed if there is a centralized hedging group, since these additional positions may cause incorrect hedging decisions to be made from the perspective of the company as a whole.

At the most sophisticated level, foreign exchange exposure tracking should also include compliance with the company's hedging policies. Hedge effectiveness testing should be included, since it is required for hedge accounting. This can be extremely difficult to achieve manually, but the required information can be compiled and presented through a treasury management system.

Tip: Some treasury management systems have a feature that automatically calculates hedge effectiveness.

Counterparty Risk Tracking

Whenever a company sells to a customer on credit, there is a risk that the customer will not pay. Similarly, if a business invests excess funds, there is a risk that the cash will not be returned by the investee. Also, the bank with which a company maintains accounts could fail. The treasury staff should continually monitor information about the financial condition of these counterparties to detect early signs of possible failure, so that it can reposition the company's cash to avoid losses. In particular, the total cash position that the company has with each counterparty should be aggregated, so that the total amount at risk can be determined at a glance; the result may be a decision to diversify investments, banks, and/or customers, so that risk is spread among a larger group of business partners.

With a treasury management system, it is possible to set counterparty limits, so that the amount of funds placed with each counterparty is flagged if a transaction exceeds a total allowed. It is possible to set these limits not only by counterparty, but also by deal type. Counterparty limits can also be set based on the credit rating of the counterparty.

From a technology perspective, it is difficult to accumulate reliable information about the financial condition of counterparties. At a minimum, the credit department should receive automated warnings whenever the Paydex score or other credit rating of a counterparty declines. However, these scores are trailing indicators that may be updated too late to allow for the recovery of assets.

Letter of Credit Tracking

If a company routinely buys and sells across international borders, it probably deals with letters of credit on a regular basis. There should be a system in place that summarizes the key information on each letter of credit, so that the treasury staff is aware of any pending documentation requirements, dates on which letters of credit will likely be presented by counterparties, the related dates of cash inflows and outflows, and so forth.

Some banks have on-line portals through which letter of credit information can be entered, and some treasury management systems have modules that can accommodate the creation and monitoring of letters of credit.

If letter of credit volume is minimal, the most cost-effective way to deal with them is likely to be a manual tracking log. Higher-volume environments call for a more computerized solution, especially given the considerable size of the transactions for which letters of credit are created.

Supply Chain Financing

A company may choose to combine its accounts payable services with a bank, in order to provide supply chain financing to suppliers. Supply chain financing, as discussed later under the topic of reverse factoring, means that a company has arranged with a bank to pay its accounts payable to suppliers in accordance with normal payment terms, but to also offer suppliers faster payment in exchange for a deduction that represents a finance charge. The company does not gain any direct advantage from using supply chain financing, but the arrangement can improve the cash flow of suppliers.

Some treasury management systems offer modules that connect the company's accounts payable, suppliers, and multiple banks in one system to offer financing to suppliers. Multiple banks should be included in these modules, to allow for competitive bidding for the best discount rates. Contact the TMS suppliers listed later in the Treasury Management System section for more information.

What If Scenarios

A more comprehensive cash management system uses "what if" scenarios to model how changes in market rates impact foreign currency holdings and the value of investments, as well as the resulting impact on profits. Scenario building can encompass the stress testing of a company's current and future

cash and investment positions, to see how the company's earnings and financial position will hold up under more extreme market conditions. Examples of stress tests are:

- Set price movements to simulate a stock market crash
- Set foreign currency prices to simulate a devaluation
- Flip the yield curve, so it is a negative yield curve (with lower interest rates on securities having longer maturities)

It is particularly important to identify the company's need for liquidity in a stress tested environment, to see if the company should alter its investment profile to support more liquid investments.

"What if" modeling requires the construction of detailed models that are tailored to the specifics of a company's circumstances. These models are usually constructed on electronic spreadsheets. If a business uses a treasury management system, the TMS may have an integrated scenario-building module that draws upon the company's cash positions that are loaded into the system.

Data Feeds

A larger treasury department will require access to a number of outside services that provide specialized cash management information. The most expensive services provide real-time information. When real-time information is not needed, a less expensive alternative is to obtain information feeds that are on a time-delayed basis, or which only provide end-of-day results.

One approach is to purchase subscriptions to each data feed. However, it is also possible to obtain interfaces to this information through a treasury management system, for which the company pays a single provider. Representative interfaces that these systems can include are:

- Reuters
- Bloomberg
- SWIFT
- A credit ratings feed

The treasury staff may occasionally want to conduct historical analyses that incorporate market data for the past few months or years. If so, much of it is available for free on the Internet. Historical information may also be included as part of the fee paid for a data feed.

Accounting

Treasury transactions must be recorded in the accounting system. At the most minimal level, this is accomplished by documenting all transactions on paper and forwarding them to the general ledger accountant for recordation. This level of manual documentation and transfer of information very nearly ensures that errors will creep into the system, which will likely result in continual reconciliations to root out errors. A more advanced treasury management system avoids this problem by recording all treasury information in its own sub-ledger, from which a custom data feed can send the information directly into the company's accounting system, bypassing manual entry by the general ledger accountant.

Tip: If there is a treasury sub-ledger, have a procedure for reviewing the information in it prior to posting transactions to the general ledger. This prevents incorrect transactions from summarizing into the financial statements.

If a sub-ledger is maintained separately from the accounting system, the account numbers used in the sub-ledger should match those used in the general ledger. Otherwise, it will be necessary to map the sub-ledger accounts to the general ledger accounts, which can cause errors when posting information to the general ledger.

An additional accounting function that the treasury staff may have an interest in is the bank reconciliation, to ensure that the bank's records of cash-related transactions match those of the company. A bank

reconciliation module is a common feature in mid-range accounting software packages. This module allows the user to easily check off deposits and checks that are recorded in the bank's records, and to create entries for items recorded by the bank but not by the company. Some of the higher-end modules also accept an automated data feed from the bank and conduct a mostly automated reconciliation, thereby allowing the staff more time in which to research reconciling items.

General Information Requirements

Thus far, we have covered information requirements for certain functional areas. In addition, there are several general areas of functionality to consider for *all* types of cash management systems. These other general information requirements are:

- **Audit trail.** There should be a change log that tracks who created, altered, and/or deleted every transaction, which can be useful from an accountability perspective, as well as to track down instances of fraud.
- **Drill down.** If cash management information is presented at an aggregate level, have a system in place that allows the user to easily drill down to lower levels of detail. In a manual environment, this could be a simple notation appended to a report, stating which source documents were used, and where to locate them. A more integrated system should allow for on-screen research through multiple levels of detail.
- **Internet lock out.** No matter what computer systems a company uses to access treasury information outside of the company, the computer hardware used for this function should be restricted from accessing any Internet sites other than those used for treasury purposes. Otherwise, someone might inadvertently download keystroke logging software that can collect password information about the systems the company uses to transfer cash.
- **Mobile access.** Where possible, use third-party solutions that offer access from mobile devices. By doing so, someone out of the office can still access account balances, approve wire transfers, review and approve positive pay exceptions, and so forth. This access level is primarily designed to review information and approve transactions. It is not intended for high-volume data entry, which is more efficiently accomplished with a desktop computer.
- **Work flow processing.** In those cases where a transaction requires the approval of a specialist or supervisor, the system should either state whose approval is required, or automatically route the transaction to that person for on-line approval.
- **Warning flags.** There should be procedures or systems in place that are designed to locate a variety of error conditions, and bring them to the attention of management. Examples of these conditions are negative cash balances, transactions not confirmed by counterparties, and unhedged exposures exceeding a certain limit.

Manual Features

The treasury staff should maintain a cluster of additional information about its business and technology partners, mostly involving contact and performance information. At a minimum, the following information should be maintained:

- Contact information for primary and secondary account representatives at every bank, data subscription service, and software and hardware provider
- A listing of services used with each business partner, as well as when each subscription and maintenance agreement is scheduled to terminate or renew

Reporting Requirements

We have already sprinkled many reporting requirements into the preceding list of cash management information requirements, but will state them again in this section, to clarify the considerable need for reports in this area. The following table contains a listing of the reports needed, and the frequency of the reports.

Cash Management Reporting Requirements

	Historical	Daily	Monthly	Quarterly
Cash forecast	✓	✓	✓	
Cash holdings	✓	✓		
Counterparty risk			✓	
Foreign exchange results		✓	✓	✓
Hedging results	✓	✓	✓	✓
Interest income			✓	✓
Mark to market adjustments			✓	

The Treasury Dashboard

A treasury dashboard contains a summarization of the key metrics that the treasury staff is most concerned about. At its most manual level, this can be information that is routinely posted in a location within the department that is readily viewable by the staff. At a more sophisticated level, the dashboard draws upon the information in a treasury management system to give an on-line presentation of real-time information about a company's cash position, risk-related activities, liquidity, and so forth. In the latter case, it is common for each user to be able to configure the content and presentation of the dashboard to meet his or her requirements, as well as to have a drill down capability that provides users with increased levels of detail.

No matter how the information in a treasury dashboard is compiled or presented, it should be reviewed on a regular basis to see if the information in it is still valid. The operational and financial structure of a business inevitably changes over time, which means that some metrics decline in importance, while entirely new measurements must be added. This review can take place at longer intervals, such as quarterly or annually. Examples of the types of information that might be included in a treasury dashboard are:

- Cash positions by bank
- Employee direct deposit activity
- Exposure hedging status
- Foreign exchange positions outstanding
- Maturity amounts by date
- Payments by type
- Payments to and from business partners

Control Issues

The excessive use of electronic spreadsheets can create a significant risk of having incorrect knowledge of currency holdings and investments, as well as incorrect formulations of hedges. Since the result is a potentially massive loss, the treasury staff should routinely evaluate its control problems related to spreadsheets. The following issues should be considered:

- **Data errors.** Is there a risk of operator error in entering information into spreadsheets? In which spreadsheets would the resulting errors cause particularly large monetary risks?
- **Spreadsheet errors.** Are there formula problems within a spreadsheet? Are there any spreadsheets in which the level of complexity is so high that errors are more likely?
- **Data transfer.** Is data being incorrectly referenced with the wrong cell formulas between worksheets?
- **Volume.** Are there so many spreadsheets in use that some are not being maintained properly, if at all?

When the treasury department has gradually built up a disparate group of manually-updated systems, there are more likely to be control problems related to the overall complexity and lack of cohesion between the systems.

If the department is subscribing to a number of data feeds from third parties, there is a risk that the incoming feeds are not being properly integrated into the company's internal systems. For example, the data may not be parsed correctly, so that data fields are incorrectly populated. This can be a particular problem when the department has developed its own legacy systems, or when data feed providers alter the composition of their feeds.

The treasurer may elect to eliminate the control issues associated with spreadsheets by moving to a treasury management system (see the next section). Doing so will certainly eliminate many control problems, since data will be automatically acquired through interfaces to other systems, and the results will be manipulated and reported by a system that is designed specifically for cash management purposes. However, a new control issue arises with this system, which is access to the many powerful functions within the system. There should be lockout controls for those functions where fraud can be perpetrated, such as for the purchase or sale of securities, or the issuance of wire transfers. Mobile access should be strictly controlled, so that the same transactions can only be triggered remotely by authorized individuals.

A lesser control issue with a TMS is the risk that a custom report designed through the system's report writing module contains incorrect information. This situation can arise when the wrong data elements are included in a report, or report totals are incorrectly configured. There should be a review process for all new reports that verifies report results before they are authorized for general distribution.

In summary, control issues are of particular concern when cash management systems are manually maintained, due to the potentially massive losses that can arise from the use of incorrect treasury information. The type of control risk changes when a TMS is used, where the primary concern is misuse of the system.

The Treasury Management System

Many different cash management functions have been described in the preceding sections. It is quite possible to maintain a number of separate systems that individually track certain aspects of cash management. Doing so is the least expensive option, but it is very time-consuming and also presents the risk of errors, since information is stored in a number of disparate systems.

An alternative is the treasury management system (TMS). This is a software package that incorporates a number of data feeds into a workstation that seamlessly aggregates a large amount of information into one place. As an example of how a TMS functions, an investment transaction entered into the system can generate a complete set of accounting journal entries, as well as an update to the cash forecast that reflects use of the cash and its eventual return upon maturity of the investment, plus create an electronic payment transaction to transfer the funds to the investee. A similarly comprehensive set of actions can be taken for a number of other transactions, including debt positions and foreign exchange hedges. The functional areas in which a TMS can aggregate information and provide enhanced usability include:

- Accounting
- Cash forecasting
- Foreign exchange
- Investments
- Risk management

A TMS is prepackaged with a small number of standard reports. These reports will probably not fulfill all of a company's reporting requirements, so additional custom reports must be constructed. To fulfill this need, a TMS should have a report writing module that allows users to create their own customized reports. A report writing module allows users to create a report format, which the module automatically populates with information from the TMS database. Ideally, the system should also allow for the automatic creation and e-mail distribution of those reports deemed most useful to employees.

These areas of TMS functionality are usually combined into separate modules, which can be purchased or subscribed to individually. A treasurer may choose to obtain one or a few modules initially, which has the advantage of reducing the up-front purchase, conversion, and training cost of the system. The department can thereby pay for those modules it needs the most, and gradually expand the number of

modules to obtain a full suite of capabilities. The only problem with this incremental rollout is that some module functionality may be lost if an acquired module depends on information that is entered into a module that has not yet been purchased.

A considerable amount of customization is needed to ensure that a TMS is fully integrated into a company's other systems, which makes a TMS an expensive proposition, and one that requires a lengthy implementation period. The cost is high enough to make a TMS a cost-effective option only for larger organizations.

Examples of companies that supply treasury management systems are:

- IT2 Treasury Solutions
- Kyriba
- Oracle
- Sungard
- Wall Street Systems

Tip: Treasury management is one of the worst areas in which to create custom-designed software. The investment is large, and the risk of a processing failure could lead to a catastrophic loss related to an investment or foreign exchange position. Despite its high cost, an off-the-shelf software solution is a more prudent choice.

Treasury management systems can be obtained that are maintained on a local server, with a variety of internal interfaces and data feeds linking into it. Alternatively, it is also possible to use the software as a service (SaaS model), where the system is maintained on the servers of the software provider, and is accessed by users through an Internet connection. The SaaS model has the advantage of not requiring any in-house maintenance expenditures. Also, the software provider can implement near-continual updates to its offerings, since it has complete control over the software, and also provides for the automatic backup of information.

An on-site system works best when a company already has a first-rate computer maintenance staff, and needs an operational system even when Internet access is down, and can afford the higher upfront cost of purchased software. The SaaS model is the better choice when a business wants to spread out payments for the service, cannot support on-site computer systems, and can tolerate occasional system down time.

When evaluating whether to purchase a TMS system, consider that the cost of the software may comprise only a fraction of the total cost of the system. The following costs must also be included in the evaluation:

- **Software.** Consider not only the cost of the software, but also any statements in the contract that the vendor is allowed to enforce certain annual price increases.
- **Hardware.** This is not only the computer hardware on which the software is located, but also any additional backup power systems, data backup devices, and environmental, security, and safety systems.
- **Training.** A TMS system is highly specialized, and so requires in-depth training for every user. Consider not only the initial training cost, but also the training required for any software updates, as well as for new employees.
- **Interfaces.** It is extremely likely that custom interfaces must be designed between the TMS software and the company's accounting system. Consider the cost of updating these interfaces whenever there are updates to the accounting software.
- **Staff.** It is possible that some treasury employees will be uncomfortable with the complexity of the new system, and may have to be replaced. This may result in termination, hiring, and additional training costs.
- **Support fees.** The TMS provider will charge a hefty annual support fee, probably in the range of 15% to 18% of the initial purchase cost of the software.
- **Report customization.** If the report writer is difficult to use, the treasurer may hire an outsider to develop and maintain custom reports for the department.

- **Procedures and controls.** The internal and external auditors may require that the department spend time formalizing procedures for and controls over the use of the new system, which may also call for the participation of outside consultants.

Tip: The cost of a TMS can be reduced by shrinking the number of outside banks that a company deals with. Doing so reduces the number of custom interfaces that must be built and maintained.

Clearly, the treasurer must plan for substantial additional expenditures beyond the purchase of TMS software. Some of the larger consulting firms routinely estimate that all other implementation costs besides purchased software should sum to about five times the cost of the software. It would be reasonable to apply this estimate to TMS software.

Tip: Periodically review the usage levels of the various TMS modules, and consider cancelling any that are not being used. Otherwise, the company will continue to pay annual support fees on systems that it is not using.

The fees just noted are specific to a purchased TMS system. If a company opts instead for an SaaS system, it will still incur costs related to staffing, training, interfaces, report customization, procedure development, and controls. Only the costs associated with hardware are completely eliminated from the SaaS model.

Though the cost of a TMS is certainly high, the following offsetting factors should be considered when developing a cost-benefit analysis for the system:

- **Audit trail.** There may be less need for audit staff time in the treasury area, if they can access a complete audit trail for all transactions.
- **Cash use.** With better information about cash positions and cash usage needs, the treasury staff may be able to invest more idle cash.
- **Improper hedging.** It may be possible to determine which historical losses could have been avoided if a TMS had been available, and model what the savings would have been.
- **Staff efficiency.** All data entry tasks are eliminated with a TMS, which may lead to a reduction of the treasury staff.
- **Transaction costs.** If the department can initiate its own trades, this means it can avoid the third-party costs that it had been incurring to have trades completed on its behalf.
- **Yields.** If there is an expectation that the company will use a TMS to forecast further into the future, this may allow for the use of longer-term investments that have higher yields. If so, the incremental increase in return on investment can be estimated.

While it is not possible to precisely quantify the exact benefits of a TMS from each of the preceding items, it should be possible to develop a range within which benefits can be expected. If so, the treasurer can assign probabilities to the likelihood of attaining certain benefits, which can be used in a cost-benefit analysis.

In short, a treasury management system can be a massive operational boon to a treasury department from the perspectives of efficiency, control, risk, and maximization of cash usage. However, it is quite expensive to install, and so may not be a cost-effective alternative for smaller companies.

Chapter Summary

A major problem encountered by a treasury department is the amount of time spent compiling information from disparate sources, as well as error-checking the information to ensure that it is correct. A common result is that the preponderance of treasury time is spent on data collection and data entry, rather than on value-added analysis work. A key task of the treasurer is to monitor the proportion of time spent on data entry and analysis, and take steps to improve the level of automation when clerical tasks threaten to take over the department. Ultimately, this may mean that an investment in an expensive

treasury management system must be made, but there are many intermediate steps that can be taken before acquiring a TMS. A reasonable process for deciding what incremental automation steps to take is to periodically survey the treasury department regarding the amount of clerical time it takes on various tasks, and then improve just those areas consuming the most time. The result may be a disparate group of partially-integrated systems, or it may mean that the department acquires one software module at a time from a TMS vendor, thereby gradually arriving at a complete TMS system over a long period of time. The path taken will depend upon the amount of funding available and the clerical workload of the department.

Review Questions

1. _____ is considered a secure way to initiate a wire transfer.
    A. Direct access to a bank's on-line system
    B. Phone call to bank
    C. E-mail to bank
    D. Fax to bank

2. Mark to market tracking is needed to:
    A. Verify that the purchase of securities is properly documented
    B. Reconcile securities records to those of the brokerage handling the company's investments
    C. Adjust the recorded value of securities to the current market price
    D. Ensure that securities are properly described in the notations to the financial statements

3. Counterparty risk:
    A. Is not a concern for the treasury department
    B. Is centered on the risk of internal fraud
    C. Involves the risk of currency devaluation
    D. Involves whether the other party to a transaction will not pay

4. Which of the following is <u>not</u> a typical data feed used by a treasury department?
    A. Reuters
    B. Internal Revenue Service
    C. Bloomberg
    D. Credit ratings

5. An item that might be found on a treasury dashboard is:
    A. Employee hiring status
    B. Cash positions by bank
    C. Mark to market adjustments
    D. Accrued payables

Review Answers

1. A. **Correct.** Direct access to a bank's on-line system is considered a secure way to initiate a wire transfer.
   B. Incorrect. A phone call is not considered a secure way to initiate a wire transfer.
   C. Incorrect. An e-mail is not considered a secure way to initiate a wire transfer.
   D. Incorrect. A fax is not considered a secure way to initiate a wire transfer.

2. A. Incorrect. Purchasing documentation is a good control, but is not related to the mark to market concept.
   B. Incorrect. Reconciliation is useful for investments, but is not related to the mark to market concept.
   C. **Correct.** Mark to market is used to adjust the recorded value of securities to the current market price.
   D. Incorrect. The use of mark to market may be described alongside the financial statements, but this is not the purpose of the mark to market concept.

3. A. Incorrect. Counterparty risk is a major concern for the treasury department.
   B. Incorrect. Counterparty risk has an external focus, and so does not relate to internal fraud.
   C. Incorrect. Counterparty risk focuses on specific outside parties, not on currencies.
   D. **Correct.** Counterparty risk involves whether the other party to a transaction will not pay.

4. A. Incorrect. Reuters is a common data feed.
   B. **Correct.** There is no Internal Revenue Service data feed.
   C. Incorrect. Bloomberg is a common data feed.
   D. Incorrect. Credit ratings are available as a data feed from several sources.

5. A. Incorrect. Employee hiring status is found in a human resources database.
   B. **Correct.** Cash positions by bank are commonly found on a treasury dashboard.
   C. Incorrect. Security holdings are likely to be reported, but not mark to market adjustments.
   D. Incorrect. Accruals are not found on a dashboard, since they do not yet relate to specific cash outflows.

Chapter 5
Cash Receipts

Learning Objectives

- Determine a measure which can be taken to prevent a delay of the daily bank deposit
- Recognize an advantage of a bank lockbox
- Identify an alternative to a lockbox
- Pinpoint a benefit of remote deposit capture

Introduction

Cash management begins with the inflow of cash from the sale of goods and services. The process for receiving cash is by no means simple, and is laced with inefficiencies and added costs. In this chapter, we explore the processing of received cash, checks, and credit cards, and discuss how to improve all three processes. The result should be more rapid access to cash for operational and investment purposes, as well as a net reduction in costs.

Check Receipts

The primary form of payment to many businesses remains the check. The basic process flow for the handling of received checks involves the receipt, recordation, and depositing of checks by different people, where there are controls in place to monitor the checks at each transfer from one person to the next. This process is designed to mitigate the risk of loss, but does so at the price of being extremely inefficient.

The processing of check receipts involves the transfer of incoming payments from the mailroom to the cashier, then to a bank courier, and finally to a person who reconciles received to deposited cash. The following steps show the basic transaction flow:

1. **Record incoming checks.** The mailroom staff opens incoming mail, records all checks received, and stamps checks "for deposit only," before forwarding payments to the cashier. This step is a control point, designed to keep a second record of check receipts in case the cashier attempts to abscond with any funds.
2. **Transfer checks.** The mailroom uses a locked pouch to transfer checks to the cashier, along with a copy of their record of checks received.
3. **Apply checks.** The cashier records the received checks, either directly to sales or as reductions of specific accounts receivable. The amount of the checks recorded by the cashier should match the amount of the checks recorded by the mailroom staff.
4. **Deposit checks.** The cashier creates a deposit slip for the checks. A courier takes the deposit to the bank, where a bank teller tallies the deposit and issues a receipt.
5. **Match to bank receipt.** The cashier matches the company's record of checks transferred to the bank to the bank's record of the amount received. This step is a control point that can detect checks removed from the deposit by the courier, or a recordation difference between the cashier and the bank teller.
6. **Conduct bank reconciliation.** At month-end, reconcile the bank's record of check and cash transactions to the company's record. This is not part of the daily check receipts process flow, but is closely related to it.

There are two key bottlenecks in check receipts processing. The first resides in the mailroom, where the mail may not arrive until late in the day, and the mailroom staff may not assign much priority to

tabulating check receipts. The cashier is another bottleneck, since this person may have difficulty ascertaining how some payments are to be applied. Further, the company has no control over bank teller availability, which can extend the time period required to deposit funds. The net result is a possible overnight delay before payments can be forwarded to the bank and accepted for deposit. In some businesses where payment processing is given a low priority, multiple days may pass before checks are finally sent to the bank.

Tip: A simple way to ensure that cash application is not delaying the daily bank deposit is to have the accounting staff record all unapplied payments in a suspense account, and keep copies of the related payments. The originals can then be deposited at once.

The check receipts process is laced with controls, since a business wants to ensure that no payments are lost or stolen. This means that payments are recorded at each step of the process and reconciled to the information recorded in the preceding step, which slows down the entire transaction. Errors are most likely to arise because check totals were incorrectly recorded during one processing step, requiring a reconciliation at the next processing step. Thus, the system of controls is itself causing errors that must be reviewed and corrected.

In addition to the delays caused by in-house processing, the bank also imposes a delay on the usage of cash. When a bank receives a check, it cannot immediately post the payment to the payee's account, since the bank has not yet received the cash from the bank on which the check was drawn. Instead, the deposit bank assigns a *value date* to the check, which is the date on which the funds will be made available to the payee. The value date may be just one day in the future, or several days longer. Some banks assign value dates that are further in the future than necessary, so that they have a short interval in which to use the cash before giving it to the payees who actually own the cash.

Tip: Consider negotiating with the bank for a value date of shorter duration, in order to gain faster access to funds.

Check Receipt Improvements

There are several excellent techniques available that can truncate most or a portion of the check receipts process, or introduce automation that improves processing speed. These techniques are noted in the remainder of this section.

The Bank Lockbox

The cash receipts process and related controls can be vastly reduced by having customers send their payments to a bank lockbox. Under this approach, the bank manages the mailbox address to which payments are sent, so that the company is taken out of the business of handling checks. Instead, the bank deposits all checks received, and posts scanned images of all receipts on its website. The cashier then accesses the check images on this secure site, which are then used to record the payments. This approach has the added advantage of posting cash to the company's bank account somewhat sooner, so that the company can take advantage of additional interest income on its invested funds. The cash receipts process flow when a lockbox is used is compressed to the following steps:

1. The bank processes receipts that arrive at the lockbox. This involves depositing payments into the company's bank account, as well as storing digital images of checks and remittances on-line.
2. The cashier accesses the bank's website each day to view the images of scanned payments from the preceding day. The cashier uses this information to apply the payments to open accounts receivable.
3. The cashier reconciles the applied amount of cash to the amount reported by the bank.

It is possible to expand upon the lockbox concept by opening a *lockbox network*. The larger banks offer lockboxes throughout the country that are linked to a single bank account, so that customers can be instructed to send payments to the lockbox located closest to them, thereby reducing the amount of mail

float. The lockbox network is especially useful for those companies that cater to many customers throughout a large geographic region. Conversely, a company with a regional presence may find that a single lockbox is sufficient for its needs.

EXAMPLE

Suture Corporation is exploring the need for a lockbox in the company's new southwest sales region. The following information is collected about sales in the region:

Average payment size	$1,740
Average number of daily payments	210
Rate of interest per day	0.015%
Average mail time saved	1.0 days
Processing time saved	0.7 days

The collected balance at a new lockbox should therefore be:

210 items per day × $1,740 each × (1.0 + 0.7) days saved = $621,180 collected balance

The daily interest income that can be generated from this collected balance is calculated as:

0.00015 × $621,180 = $93 daily interest income

The fee charged by the bank for each check processed is $0.20, so the offsetting daily processing cost is:

210 checks × $0.20 processing fee = $42 daily processing fee

Therefore, the net profit per business day from having a lockbox is $51 (calculated as $93 of daily interest income, less the $42 daily processing fee), which is $13,260 when calculated for a year containing 260 business days.

The bank also charges $150 per month as a fixed fee for operating the lockbox, which reduces the $13,260 annual profit by $1,800. Thus, the net profit from operating the proposed lockbox is expected to be $11,460.

Tip: The bank offering lockbox network services should periodically include a free analysis of the most cost-effective locations in which to have lockboxes.

The downside of the bank lockbox is a combination of fixed monthly fees and per-receipt fees charged by the bank, which makes this alternative cost-effective only for medium to larger-size companies that receive large numbers of checks. If this method does not appear to be cost-effective, then consider the later discussion of remote deposit capture, which may be available for free, and which can accelerate the speed with which cash becomes available to earn interest.

It can be quite a chore to convince customers to route their payments to a lockbox. Schedule several reminder messages to customers, as well as a number of follow-up phone calls, and even then expect to have a few intransigent customers who persist in mailing their payments to the company. If so, have the mailroom staff immediately mail these payments to the lockbox. Doing so eliminates the need for in-house cash controls.

Tip: Include in customer billings a return envelope that is stamped with the lockbox address. Also, make sure that all billing documents sent to customers only include the lockbox address; there should be no reference to the company's normal mailing address.

If the company does not want to use a lockbox, an alternative that can speed the collection of cash is to rent a post office box in or near the primary mail processing facility for the local area, and then have an employee or courier pick up the mail as soon as it is made available at the post office box. The primary mail processing facility should receive cash several hours prior to the local branch offices, so this approach can shave hours from the time required to process payments and deposit them at the local bank. Also, if the bank has a local operations center that is not located too far from the company, take deposits there, rather than to the local bank branch office. The operations center probably has a delayed deposit cutoff time that can be useful when the deposit is not ready by the normal cutoff time.

The use of a lockbox is the key enhancement of the cash receipts process, since the only person directly involved in check receipts is now the cashier; the bottlenecks related to the mailroom staff, courier, and bank teller are eliminated. If a lockbox is implemented, there is no need for any of the other improvements noted through the remainder of this section, with the exception of automatic cash application.

Automatic Cash Application

When a company receives a large number of customer payments every day, it can be quite difficult for the cashier to apply the receipts against open accounts receivable in a timely manner. If so, deposits may be delayed. The cash application process can be substantially compressed through the use of automatic cash application.

Automatic cash application requires that the lockbox operator use a data feed to forward to the company the magnetic ink character recognition (MICR) information from each check received at the lockbox, as well as the total payment amount. The cash application software uses a decision table to decide how to apply these payments to open accounts receivable. The automated decision process generally follows these steps:

1. Match the bank account number shown in each check's MICR information to the correct customer. This accesses the correct customer record of open accounts receivable.
2. Only match payments to invoices where the payment amount exactly matches the invoice amount.
3. Of the remaining payments, only match cash to invoices where the cash amount matches the exact amount of several invoices that have just come due for payment.
4. Kick out all remaining payments for manual review.

The decision table can contain more sophisticated rules, such as applying cash if payment amounts do not include the freight and/or sales tax elements of an invoice. As a company examines the payments kicked out by the system, it can gradually adjust the decision table to increase the number of automatic cash applications. However, the variety of deductions taken makes it unlikely that it will ever be possible to completely automate the cash application process. Nonetheless, automatic cash application can greatly improve the speed with which cash is applied.

Mailstop Number

A potential delay in cash processing is when the mailroom sorts through all of the day's mail, opens those items containing cash or checks, and forwards them to the accounting department as part of its general distribution of mail. A faster approach is to have all customers incorporate a mailstop number into the address to which they mail funds. When the mailroom employees see these addresses, they immediately forward them to the accounting department without opening the envelopes. To encourage the use of a mailstop number, include it in all invoices, and also consider sending a separate mailing to customers that announces the change.

A potential problem is that payments will no longer be recorded by the mailroom staff, which reduces the level of control over cash. There are two ways to deal with this concern:

- Have someone in the accounting department who is not involved with cash receipts record all incoming checks to replace the work done in the mailroom.

- Instead of making a separate list of incoming checks against which receipts are later reconciled, have the accounting person handling the incoming checks make two complete photocopies of all payments made, and then immediately prepare the original checks for deposit. One of the photocopies goes to the cash application staff, to be used as the source document for cash applications, while the other copy is used as a control document that can be reconciled to the register of cash receipts.

Remote Deposit Capture

A remote deposit capture system involves the use of a check scanner and bank-provided scanning software that creates an electronic image of each check to be deposited. The accounting staff then sends the scanned check information in an electronic message to the bank, rather than making a physical deposit. The bank accepts the deposit information directly into its database, posts the related funds to the company's account, and assigns funds availability based on a predetermined schedule.

Remote deposit capture requires slightly more time by the accounting staff to prepare a deposit (by scanning checks) than by the traditional approach of preparing a deposit slip. However, it completely eliminates the time required to make a physical deposit at the bank, as well as the control point of matching the bank's receipt to the deposit slip.

Tip: Remote deposit capture has the side benefit of allowing a company to do business with a bank that is not located nearby. Thus, a business can search among a larger group of banks for the best pricing deal.

Tip: Some banks require a monthly scanner rental fee. Consider shifting to a bank that offers the scanning equipment for free, or attempt to negotiate a lower rental charge.

Remote deposit capture will require the inclusion of new steps in the check processing work flow, which are:

1. Derive the batch total for all checks to be scanned.
2. Scan all checks in the batch.
3. Match the scanned total to the batch total and adjust as necessary.
4. Transmit the batch to the bank.
5. Print and retain a deposit slip.

There may also need to be an additional step to retain the scanned checks for a short time to ensure that they have been accepted by the bank, after which they should be shredded or perforated with a "deposited" stamp. The check destruction or mutilation is required to ensure that they are not inadvertently deposited again.

Cash Receipts

Cash is the most fungible of all assets, and therefore the one most likely to be stolen. Because of the high risk of theft, the receipt and subsequent handling of cash is choked with controls. The following steps show only the most basic cash receipts processing steps, but should convey the point that cash receipts is *not* an efficient process.

1. **Accept and record cash.** If a customer pays in cash, record the payment in a cash register. If there is no cash register (as may be the case in a low-volume sales environment), the sales clerk instead fills out a two-part sales receipt, gives a copy to the customer, and retains the other copy.
2. **Match receipts to cash.** Compare the amount of cash received to either the cash register receipt total or the total of all sales receipt copies, and investigate any differences. Complete a reconciliation form for any differences found.
3. **Aggregate and post receipt information.** Summarize the information in the cash register and post this information to the general ledger as a sale and cash receipt. If the cash register is linked

to the company's accounting system and is tracking individual sales, then sales are being recorded automatically, as is the reduction of goods in the inventory records. If sales clerks are manually completing sales receipts, summarize the information in the sales receipts and record the sales and any related inventory reductions in the general ledger.

4. **Deposit cash.** Prepare a bank deposit slip, retain a copy, and enclose the original slip along with all cash in a locked container for transport to the bank. After counting the cash, the bank issues a receipt stating the amount it has received.
5. **Match to deposit slip.** Compare the copy of the deposit slip to the bank receipt, and investigate any differences. A variation is to compare the cash receipts journal to the bank receipt.

There are two bottlenecks in cash receipts processing. The first is the sales clerk, who piles up cash receipts in batch mode until someone counts and removes the cash. This delay is not the fault of the sales clerk—the nature of the process mandates that cash will be transferred to accounting in batches. The second bottleneck is the cashier, since the relatively paltry volume of cash (in most businesses) will tend to push cash recordation down in the cashier's list of work activities, below processing checks and credit card receipts.

As was the case with handling check payments, errors are most likely to arise when cash is counted before being passed to the next person in the process flow. Again, this means that the control system itself is causing errors.

Cash Receipts Improvements

The accounting for cash is slow and inefficient. The only redeeming feature, and one which suggests a solution, is that cash comprises quite a small part of sales in many businesses (other than retail operations and casinos). If a business only deals with cash on an incidental basis, the primary solution is to completely eliminate the use of cash. There are two alternatives available:

- **Offer discounts for credit card purchases.** This alternative may seem counter-intuitive, since every business is charged a fee by its credit card processor when a payment is made by credit card. However, the complete elimination of cash payments may reduce paperwork to such an extent that the extra credit card fee still represents a cost-effective solution. Also, the discount can be more precisely targeted at the holders of debit cards, since purchases made with debit cards involve smaller processing fees for a business.
- **Offer discounts on company credit card.** As has been the case for many years, larger businesses offer their own name-brand credit card to customers, usually with an up-front cash savings. This approach immediately changes an impending cash payment to a credit card payment, while also placing the customer on the company's mailing list for future marketing activities.

In addition, and if cash deposits are large enough to warrant its use, consider hiring a money transport service to move cash from company locations to the local bank branch. This service involves handing off a locked container to a transport employee who transfers it to the bank, which then unlocks the container and processes its contents. This service provides transport on a regular schedule, so a company does not have to concern itself with finding a staff person who can personally transport the cash. The result is both more secure transport and deposits that are more likely to reach the bank on time.

In short, our primary suggestion is the complete elimination of cash from a company's list of accepted payments—there are no improvements that make a noticeable dent in this overwhelmingly inefficient procedure.

Credit Card Receipts

Credit card receipts are an important source of cash in many businesses, especially in the retail sector. There are several ways to process these receipts. In order to show the most complete process flow, we are assuming that the most complex version of credit card payments is in use, where card information is written down and then manually entered into an on-line form. The steps are:

1. **Collect information.** Record not only the information needed for the credit card payment, but also the contact information for the customer, in case it is necessary to verify or replace credit card information.
2. **Enter card information.** Access the credit card processing site on the Internet and enter the credit card information through an on-line form. When the information is accepted, print a receipt and staple it to the sales receipt. If the payment is not accepted, contact the customer to verify or replace the card information.
3. **Record the sale.** Enter the sales receipt into the accounting system as a sale. Then stamp the sales receipt as having been recorded.
4. **Issue receipt to customer.** If customers pay by phone or e-mail, send them a receipt, which they may need when they reconcile their company credit card statements at the end of the month.
5. **Verify the transaction.** Before filing sales receipts for credit card transactions, verify that the cash related to them has been posted to the company's bank account, and that they were posted to the accounting system.
6. **File documents.** File the company's copy of the sales receipt, as well as the attached credit card processing receipt, in the accounting records by customer name. If an invoice was printed as part of the sale, then file all three documents together.

The time required to record credit card information, enter it into an on-line form, and then send a receipt back to the customer is so time-consuming that the clerk handling these transactions could become a bottleneck.

When credit card information is being manually entered, the error rate is extremely high. The problem is caused by a combination of taking down credit card information incorrectly, and/or incorrectly inputting the information into the on-line form. The error rate is much lower when a credit card is swiped to obtain card information.

Credit Card Receipt Improvements

Though credit card processing involves a well-established procedure, the approach involving the manual entry of card information can be enhanced with either of the following improvements.

Enter Information in On-line Form Immediately

The largest flaw in the preceding description of credit card transactions is that the order taker is separating the collection of credit card information from the entry of this information in the on-line form provided by the company's credit card processor. This separation of tasks requires that information be written down and *then* entered, possibly also requiring a call back to the customer if the information was incorrect or the credit card was not accepted.

The lean approach is to call up the on-line form while still in contact with the customer and enter the information immediately. Doing so eliminates the need to write down the customer's information, since it is going straight into the on-line form. Also, there is no need for a time-consuming feedback loop to obtain additional information from the customer, since the customer is still on the phone with the order taker if any problems arise.

This approach requires that the on-line form be available when customers call with orders, which may be a problem if the form is configured to automatically close after a certain amount of time has passed. However, it is still fairly efficient to log back into the form for every customer order, since logging in is much less time-consuming than the full process described earlier.

On-line Payment Apps

The full process flow described for the on-line entry of credit card information can be reduced with any of the on-line apps now available for smart phones and tablet computers. These apps allow you to create a sale transaction on a portable computing device by typing in or swiping credit card information, processing payment with an integrated on-line form, and sending an e-mail receipt to the customer.

This combination of a fully integrated payment processing and receipt issuance platform allows for the elimination of many steps in the traditional credit card processing transaction. In essence, payment information is both collected and confirmed in one step, leaving only a final step to record the sale transaction.

The main problem with these apps is that they do not also relieve inventory when a sale is made, so this approach works best when a company is not using a perpetual inventory system.

Debit Cards

From a cash management perspective, credit cards are both good and bad for a business. They accelerate cash flows well beyond what might be expected from customers paying with checks, which is a huge benefit if a company is strapped for cash. However, the credit card providers all charge high transaction fees that are at least 2%, and frequently much more. These fees are debilitating in a low-margin business, where it may appear that a large part of all profits are being handed off to a third party.

The search for an ideal combination of rapid cash flow and reduced transaction fees leads to the use of debit cards, for which the transaction fee is sharply lower. A business can encourage the use of debit cards by having credit card swipe equipment present a debit card payment as the primary option, or by instructing sales clerks to ask customers if they would like to pay with a debit card. Ultimately, a customer does not have to pay with a debit card, but the selling process should be structured to encourage its use.

Chapter Summary

In this chapter, we have described the basic process flows for different types of cash receipts, as well as several techniques for improving them. Most of these processes are inherently inefficient or expensive, so proper cash management should focus on significantly restructuring how cash receipts are handled. Of particular importance is the use of a lockbox to receive check payments, since it eliminates a number of processing steps and controls within a company. Cash payments are to be avoided in favor of other payment methods where possible, while debit cards represent a significant cost improvement over the use of credit cards.

Review Questions

1. Check application is the assigned task of the:
    A. Treasury staff
    B. Mailroom staff
    C. Cashier
    D. Controller

2. The value date:
    A. Accelerates the use of cash
    B. Delays the use of cash
    C. Is part of the mail float
    D. Is required by law to be at least three days

3. A lockbox network:
    A. Involves one lockbox at each bank used by a company
    B. Requires suppliers to enter their invoices through an on-line portal
    C. Is essentially a high-security system for transferring cash between subsidiaries
    D. Is a number of lockboxes spread across a large geographic region

4. Automatic cash application requires the use of _____ information.
    A. Magnetic character ink recognition
    B. Magenta colored ink recognition
    C. Bar code
    D. Radio-frequency identification

5. The use of cash by customers can be reduced by:
    A. Offering discounts with alternative forms of payment
    B. Keeping an ATM on store premises
    C. Increasing the level of control over cash handling
    D. No longer using a money transport service

Review Answers

1. A. Incorrect. The treasury staff is not involved in check application.
   B. Incorrect. The mailroom staff records incoming checks, but does not apply cash to open accounts receivable.
   C. **Correct.** The cashier applies cash to accounts receivable.
   D. Incorrect. The controller only applies cash if there is no cashier.

2. A. Incorrect. The value date delays the use of cash.
   B. **Correct.** The value date delays the use of cash.
   C. Incorrect. The value date comes after the time period designated as the mail float.
   D. Incorrect. There is no specific legal requirement regarding the duration of the value date.

3. A. Incorrect. A lockbox network is usually operated by a single bank.
   B. Incorrect. Suppliers can be required to use a portal, but this does not involve a lockbox network.
   C. Incorrect. The cash coming into a lockbox network may indeed be transferred between subsidiaries, but that is related to a cash concentration system.
   D. **Correct.** A lockbox network is a number of lockboxes spread across a large geographic region.

4. A. **Correct.** MICR information is used for automatic cash application.
   B. Incorrect. Magenta-colored ink is not used in automatic cash application.
   C. Incorrect. Bar coding is not used in automatic cash application.
   D. Incorrect. RFID is not used in automatic cash application.

5. A. **Correct.** Offering discounts to use other forms of payment can reduce cash payments.
   B. Incorrect. The presence of an ATM will encourage customers to pay with cash.
   C. Incorrect. The level of control only impacts internal operations, not the amount of cash paid to the company.
   D. Incorrect. The use of a money transport service follows the receipt of cash, and so has no impact on cash payments

Chapter 6
Cash Concentration Systems

Learning Objectives

- Identify a characteristic of a threshold cash sweep
- Recognize a feature of notional pooling
- Identify the purpose of multi-tiered banking
- Determine the best type of cash pooling system for control of the cash balance

Introduction

A key treasury task is to collect and concentrate incoming cash as quickly as possible, so that it is made available for operational and investment purposes. There are several cash aggregation services available from banks that can assist in this process. One approach, called cash sweeping, moves cash into a central concentration account; this is useful for centralized payment and investment systems. An alternative, notional pooling, aggregates cash from multiple accounts for investment purposes, without actually shifting the cash into a concentration account. We will explore the mechanics of these two cash concentration systems in this chapter, as well as other topics related to these systems.

The Need for Cash Concentration

Many organizations have a large number of highly dispersed locations that collect or disburse cash. The classic example is a chain of retail stores, each of which collects cash and checks every day, and forwards them to a local bank account. If the treasurer were to leave the cash in these accounts untouched, they would not earn any interest income for the company. In these situations, it is necessary to find a way to concentrate the balances in the various accounts in order to maximize use of the cash.

There is a temptation *not* to concentrate cash balances, for concentration requires either an automated bank system (for which the fees are not inconsiderable) or the ongoing daily monitoring and movement of cash balances by the treasury staff. However, the cost of unused cash can be quite substantial. Follow these steps to determine the cost of cash that remains in non-interest-bearing bank accounts:

1. **Determine the average account balance.** This information is available as an end-of-day account balance on the most recent bank statement. Add up the end-of-day balances for all days in the month and divide by the number of reported days.
2. **Determine the interest rate.** If the company has debts that it could pay down with the excess cash, then use the interest rate that the company is paying on this debt. If there is no debt, use the interest rate that the company is currently earning on its short-term investments (which is usually lower than the debt interest rate).
3. **Calculate lost earnings.** Multiply the average account balance by the interest rate to arrive at the cost of unused cash.

In most cases, the treasury staff will want access to residual cash to cover periodic spikes in the demand for cash. This means that the interest rate on short-term investments is the most reasonable rate to use for determining the cost of residual cash, rather than the interest rate on debt; the staff would never actually use the cash to pay down debt, since doing so creates a risk of not having enough cash on hand.

Another way of looking at the cost of a widely-dispersed set of bank accounts is the cost of overdrafts charged by the bank when an account balance turns negative. In the current market conditions, a company is lucky to obtain 2% interest on its short-term investments, but will be charged at least 10% interest on any bank overdrafts. If there is no cash concentration system in place, the bank is entitled to charge

interest on all overdraft situations. Conversely, a cash concentration system will set all account balances to no worse than zero, so that overdraft charges are no longer possible. Thus, if a company has a history of debit balances in some of its bank accounts, the elimination of expensive overdraft interest charges may justify the cost of a cash concentration system.

EXAMPLE

Suture Corporation has four subsidiaries, all of which are allowed to manage their funds locally. Subsidiary D has a history of having negative cash balances, which has led to a significant amount of bank overdraft charges. In the past year, the average account balance and interest income or expense associated with each subsidiary is noted in the following table, where interest income is earned at 2% and overdrafts are charged at 10%:

Subsidiary	Average Cash Balance	Applicable Interest Rate	Annual Interest Income / Expense
A	$82,000	2%	$1,640
B	30,000	2%	600
C	17,000	2%	340
D	-45,000	10%	-4,500
Totals	$84,000		-$1,920

In short, the 5x difference between the interest income paid by the bank and its bank overdraft charge virtually eliminates all interest income that the company might otherwise earn.

The treasurer investigates the possibility of a cash concentration system, and finds that a key benefit is the automatic cross-funding of accounts with negative balances from those accounts with credit balances, thereby eliminating the overdraft charge. For the past year, the result would have been a 2% rate of income on the entire $84,000 company-wide average cash balance, which is $1,680. Thus, there would have been a net increase of $3,600 in interest income by switching to a cash concentration system, where Suture goes from $1,920 of net interest expense to $1,680 of interest income. This increase in interest income is calculated prior to the imposition of any bank fees related to running the cash concentration system.

Yet a third benefit of cash concentration is the reduction in investment fees. When a single large investment is made from a concentration account, a company pays only a single transaction fee to initiate the transaction. If, however, cash is invested locally from many accounts, a transaction fee will be imposed for each investment made from every account. Thus, investment costs can be radically reduced when cash is pooled into a single location.

Cash Sweeping

A cash sweeping system (also known as physical pooling) is designed to move the cash in a company's outlying bank accounts into a central concentration account, from which it can be more easily invested. Cash sweeps are intended to occur at the end of every business day, which means that quite a large number of sweep transactions may arise over the course of a year.

Cash sweeping can be fully automated as long as a company keeps all of its bank accounts with a single bank, where the bank can monitor account balances. Since several banks now span entire countries, it is not especially difficult to locate banks that can provide comprehensive sweeping services across broad geographic regions.

The Zero Balance Account

One way to implement a cash sweeping system is the *zero balance account* (ZBA). A ZBA is usually a checking account that is automatically funded from a central account in an amount sufficient to cover presented checks. To do so, the bank calculates the amount of all checks presented against a ZBA, and pays them with a debit to the central account. Also, if deposits are made *into* a ZBA account, the amount

of the deposit is automatically shifted to the central account. Further, if a subsidiary account has a debit (overdrawn) balance, cash is automatically shifted from the central account *back* to the subsidiary account in an amount sufficient to bring the account balance back to zero. In addition, subsidiary account balances can be set at a specific target amount, rather than zero, so that some residual cash is maintained in one or more accounts.

There are three possible ZBA transactions, all of which occur automatically:

- Excess cash is shifted into a central account
- Cash needed to meet payment obligations is shifted from the central account to linked checking accounts
- Cash needed to offset debit balances is shifted from the central account to linked accounts

The net result of a ZBA is that a company retains most of its cash in a central location, and only doles out cash from that central account to pay for immediate needs.

EXAMPLE

Suture Corporation has a ZBA arrangement where three accounts used by local facilities are linked to a cash concentration account. At the end of Monday, the three accounts have the following balances, along with associated transfer activity:

Account	Ending Balance	To/From Concentration Account	Transferred Amount	Ending Account Balance
A	$45,000	To	-$45,000	$0
B	-12,000	From	+12,000	0
C	39,000	To	-39,000	0
	$72,000		-$72,000	$0

The ZBA system has extracted funds from accounts A and C to bring their balances down to zero, and added funds to account B in order to bring its balance *up* to zero.

A company's bank will charge a monthly service fee to manage a ZBA, and may add additional charges for each individual automated transaction to move cash into or out of a ZBA.

A ZBA may transfer cash across national boundaries, which can cause tax issues that the tax department should monitor. If there is a national prohibition on cash transfers across borders, it may not be possible to create a cross-border ZBA.

Multiple Sweep Arrangements

An alternative to sweeping in cash from outside a bank's system is to have a separate sweeping system for each bank that the company uses. Thus, it may have one bank servicing its stores in the western half of a country, and design a system that sweeps cash from those accounts into a concentration account that is still within the same bank. The same approach could be used for each of a company's banks. This approach minimizes sweeping costs, but does require that more concentration accounts be monitored for investment purposes.

Multiple sweeping arrangements may be necessary when there are accounts within different countries. Depending on the situation, cross-border transfers can be time-consuming, and may even be restricted by government rules. If so, a reasonable alternative is to conduct sweeps within each country. This may mean that the funds concentrated through each sweeping system are also invested within the same country.

In situations where there is no prohibition on cross-border cash concentrations, but cash is administratively difficult to move across borders, the treasury staff can still plan for occasional transfers that are manually initiated. These moves should be coordinated with the company's tax planning staff, to ensure that the company is complying with all local tax laws when shifting funds into or out of a country.

Manual Sweeping

There may be situations where the bank operating a cash sweep cannot automatically initiate a sweep for an account located outside of its system. If so, the treasury department can resort to a more manual approach where the person responsible for the account notifies the treasury staff of the most recent deposit amount or account balance; this triggers an ACH debit transaction by the treasury staff to move the funds out of the outlying account and into an account located within the sweep system. For those parts of the world where ACH debits are not available, a more expensive alternative is to move the funds with a wire transfer. Given the high cost of a wire transfer, it may be more cost-effective to let cash pile up and then initiate wire transfers at longer intervals.

Tip: A manual deposit reporting system is subject to error, which can trigger an overdraft charge if a company withdraws an excessive amount from an account. Consequently, review all overdraft notices in detail, to determine what problem caused them to occur.

Sweeping Rules

A number of rules can be set up in a cash sweeping system to fit the cash requirements of the business entity using each account, as well as to minimize the cost of the system. Rules usually address:

- **Frequency.** Cash can be swept from some accounts at longer intervals than for other accounts. Some accounts accumulate cash very slowly, and only require an occasional sweep.
- **Threshold sweeps.** Cash can be swept only when the cash balance in an account reaches a certain level. This minimizes the cost of initiating sweeps for very small amounts of cash.
- **Target balances.** A designated amount of cash can be left in an account to ensure that a certain balance is always available. This may require that cash be sent *into* an account, rather than the usual outbound sweep. Target balances are useful when day-to-day operating needs are being met locally through an account. For example, a local bank may automatically extract its monthly service fee from an account, and will charge an overdraft fee if the account contains no cash with which to pay the service fee.

Sweep Problems

Cash sweeping is not to be engaged in lightly when cash is being moved among the accounts of multiple business entities, and especially when cash is being moved across national boundaries. Cash sweeping can cause all of the following problems:

- **Thin capitalization.** The automated extraction of cash from a subsidiary may result in a covenant breach with a lender, since the subsidiary has replaced cash with a loan receivable.
- **Recognition of interest income.** Some local tax jurisdictions will take exception if a business recognizes all of its interest income at the corporate level, since the cash that generated the interest income is located at the subsidiary level. To offset this problem, all interest earned should be allocated back to the subsidiaries based on the amount of their cash that was used to generate the income.
- **Recognition of interest expense.** As was the case with interest income, some tax jurisdictions want to see an interest charge recorded against those subsidiaries that required a cash infusion to avoid an overdraft situation. The interest charge should be based on the interest rate paid by the company for its debt; in the absence of any debt, use the market interest rate.
- **Sweep timing.** Cash is swept from an account near the end of each business day. Depending on sweep timing, it is possible that a late deposit into an account will not be swept into the concentration account until the following day, so that one day of interest income is lost.

Tip: Always document how interest income and expense is allocated back to and recorded by subsidiaries, since tax auditors may want to review this information.

Sweep Costs

Banks charge high service fees for cash sweeps, which should be factored into whether the service should be used. For example, a typical monthly sweep charge is $150 (which is $1,800 per year), while the interest income earned from sweeps is relatively low. The following table notes the cash balance breakeven point for different interest rates, assuming the $1,800 annual bank fee.

Cash Sweeping Breakeven Analysis

Annual Bank Fee	Interest Rate	Cash Required to Break Even
$1,800	1.0%	$180,000
1,800	1.5%	120,000
1,800	2.0%	90,000
1,800	2.5%	72,000
1,800	3.0%	60,000
1,800	3.5%	51,000
1,800	4.0%	45,000
1,800	4.5%	40,000
1,800	5.0%	36,000

At the low interest rates that frequently apply in today's credit markets, the preceding table shows that a company probably needs to have an average cash balance of at least $100,000 on an ongoing basis before it should even consider using a bank's cash sweeping service.

EXAMPLE

A subsidiary of Suture Corporation is located in a country that does not allow the transfer of cash outside of its borders, so the subsidiary's treasurer investigates the use of a cash sweep for the 10 Suture bank accounts located within the country. In the past three months, these accounts averaged an aggregate cash balance of $127,000. The subsidiary can earn 2.2% on its short-term cash investments. The company will be charged $2,000 per year by its bank for cash sweeping services. Thus, if the company were to create an in-country cash sweep, the result would be:

($127,000 Cash balance × 2.2%) - $2,000 Annual fee = $794 Net profit

The profits from the prospective sweep arrangement are quite small but are still positive, so the treasurer elects to proceed with the arrangement.

The cost of individual sweeps is minimal if all of the accounts are administered by the same bank, since the bank can simply shift the funds with an entry in its own accounting records. However, if an account is being swept that is *not* within the bank's system, the cost of doing so over time can be substantial. An ACH debit transaction is the least expensive alternative, but this method is not available in many parts of the world, and also involves a one-day lag. A wire transfer will work, but is much more expensive than an ACH debit.

EXAMPLE

Suture Corporation's treasurer learns that a $50,000 wire transfer has just been made into an outlying account that is not automatically swept by the company's primary bank. If the treasurer initiates a $20 wire transfer, the funds will be shifted into the company's concentration account the same day, and so will be available for investment in a bond that yields 4% interest. Alternatively, he can initiate the transfer by ACH, which costs only $0.50, but which requires a one-day delay. If the cash remains in its existing account overnight, it will earn a 1% earnings credit that will offset bank fees charged against the account.

The difference between the interest rates that can be earned from the two investment options is 3%, which is worth the following amount of interest income for a single day of investment:

($50,000 Cash × 3%) ÷ 365 Days = $4.11/day

Since the incremental difference in earnings from the two investment options is so small, the most cost-effective sweeping arrangement is to initiate an ACH to move the funds with a one-day delay.

Summary

Cash sweeping is a rather expensive way to move cash into a central concentration account for investment purposes. Given the minimal interest rates now available on short-term investments, the decision to use cash sweeping mandates a detailed cost-benefit analysis. If a company does not expect to maintain a reasonably large aggregate cash balance across all of its accounts, it is entirely possible that a sweeping arrangement will actually *lose* money for a company. Also, and due to the same low interest rates, it is rarely cost-effective to use wire transfers to sweep in cash from outlying accounts. Instead, consider using less expensive alternatives that may require one or more days to centralize the excess cash.

Notional Pooling

Cash sweeping can be considered an intrusive cash concentration system, since it moves cash among accounts. Local managers may complain that they do not have control over their cash, since it is being moved out from under their control. An alternative is to allow cash to remain where it is and under local control, but to record it at the bank as though the cash has been centralized. This is called *notional pooling*. If a bank offers notional pooling, it simply combines the ending balances in all of a company's accounts to arrive at an aggregate net balance. If the result is a positive cash balance, the bank typically invests the funds automatically and pays the company interest income on the amount invested. If the result is a negative cash balance, the bank charges interest on the net negative amount.

The notional pooling concept is particularly useful when individual accounts are owned by subsidiaries that want control over their cash, and do not want to see it commingled in a central concentration account.

Another advantage of notional pooling is that a few banks offer pooling across currencies. This means that interest is earned on cash holdings denominated in multiple currencies, without ever having to engage in any foreign exchange conversions into a single investment currency.

Some banks offer the automated allocation of interest income back to the accounts where cash is stored, based on the actual amount of interest earned and the relative proportions of cash in the various accounts included in the pooling arrangement.

Notional Pooling Problems

Though notional pooling initially may appear to be an ideal solution, there are some problems that limit its use. These issues are:

- **Availability.** Notional pooling systems are prohibited in some countries, and are impractical in others where banking systems are not sufficiently integrated to allow for the virtual aggregation of funds. The reason for the prohibition of notional pooling is that some governments believe that such pooling constitutes a co-mingling of funds from different entities. Notional pooling is allowed in most European countries, but is not allowed in the United States.
- **Legal restrictions.** Even when notional pooling is allowed, some countries restrict its used to wholly-owned subsidiaries. Other countries do not allow notional pooling to include accounts located in other countries.
- **Single bank network.** The approach only works within the account network of a single bank, since the bank must have the capability to "see" all account balances. If a company uses multiple

banks, it can instead employ a separate notional pooling arrangement with each bank, or a mix of notional pooling and cash sweeps.

- **Recognition of interest income and expense.** A notional pooling system awards interest income to the corporate parent. As was the case with cash sweeping, this means that some tax jurisdictions will want that interest income to be allocated back to the subsidiary level. The same allocation is needed for interest expense, if an account carries a debit balance. These allocations should be fully documented, since they may be perused by tax auditors.

For the first three reasons just noted, notional pooling tends to be a partial solution that works well in some areas, and is not available or allowed in others. Consequently, and despite the attractiveness of the concept, it is more likely to be implemented in a patchwork manner, with different systems installed in different parts of the world.

Notional Pooling Costs

The cost of notional pooling is lower than for cash sweeps, since no transactions are used to move cash between accounts. Also, the time that might be required by the treasury staff to manually move funds is eliminated. Finally, the bank overdraft expense that might otherwise be charged on accounts having negative balances is eliminated, since the debit and credit positions in all accounts are merged through notional pooling; ideally, credit positions will exceed the amount of any debit account balances.

Summary

When it is available, notional pooling is administratively simple and allows for the retention of cash in accounts at the local level. However, the system is not allowed in some countries, and cannot be used as a single system where accounts are being administered by multiple banks. The latter issue is addressed in the next section, Multi-Tiered Banking.

Multi-Tiered Banking

There may be situations where a company has long-standing relationships with certain local banks that it wants to maintain, perhaps due to connections with local business partners. It is quite possible that these local banks cannot be linked into a company's worldwide cash concentration system on an automated basis. If so, an alternative is to have the company's primary bank open an account on behalf of the company within every country where the company does business, and then periodically shift funds from the local bank accounts into the designated accounts of the primary bank.

The result is a two-tiered structure, where the lowest level of banks is responsible for the local receipt and payment of day-to-day operating transactions. Excess cash is siphoned off to the higher tier of banks, which are then used to concentrate the cash on either a sweep or notional pooling basis for investment purposes. Cash transfers between the two tiers of banks may have to be manually initiated, in which case it may be more cost-effective to concentrate cash at longer intervals.

The two-tiered structure is certainly subject to local banking regulations, and so may not be universally applicable. Nonetheless, the concept can bring additional centralization to a dispersed system of accounts that might at first appear to resist centralization.

Hybrid Pooling Solutions

It may be possible to combine the best aspects of cash sweeping and notional pooling in situations where a business has multiple subsidiaries. In this case, there can be a two-step arrangement, which is as follows:

1. **Subsidiary cash sweep.** There may be a large number of bank accounts controlled by a subsidiary, perhaps being used by individual store locations. The excess funds in these accounts are periodically swept into a concentration account for the subsidiary—not for the entire corporation. This approach keeps cash within the subsidiary entity, so there are no issues with reducing the capitalization of each entity.

2. **Corporate pooling.** Once all cash has been swept at the subsidiary level, notional pooling is used to link the cash concentration accounts of the subsidiaries. Centralized investment activities are then conducted at the corporate level, with interest income being apportioned back to the subsidiaries from which the cash was notionally taken. This approach eliminates the need for intercompany loans, as would be needed if the cash were to be physically shifted to the corporate entity.

Cash Concentration Best Practices

Irrespective of the type of cash concentration system being used, the treasury staff should periodically review a number of structural issues involving a company's use of bank accounts. These issues are:

- **Examine low-usage accounts.** Review accounts having extremely low transaction volumes to see if the transaction activity can be shifted into a more active account. This can eliminate account servicing fees, and makes it easier to concentrate cash for investment purposes.
- **Review the accounts of acquired businesses.** Include on the company's acquisition checklist a reminder to review the bank accounts of every acquired business. There are likely to be opportunities for account reduction within these inherited accounts.
- **Mandate deposit cutoff times.** Review the company's procedures for depositing cash, to ensure that cash is deposited by a certain cutoff time each day. If deposits are made late, they may not be picked up by a bank's automated cash sweep, and so will not earn interest income until the following business day.
- **Administration charges.** Charge back a reasonable amount of treasury expenses to the company subsidiaries if there are significant expenses traceable to cash concentration activities. By doing so, the company can realize tax savings when its subsidiaries are located in high-tax regions. The strategy is less useful when subsidiaries are located in low-tax regions where there is little benefit to be gained from an expense allocation.

EXAMPLE

The treasury staff of Suture Corporation is conducting a routine review of open bank accounts and notices that an account from a recent acquisition is still open. The account contains a balance of $5,000, and has essentially no activity. The bank is charging $50 per month to keep the account open. Suture is currently earning 3% on its short-term investments. Based on this information, the annual cost of the account is:

($5,000 Account balance × 3% Earnings rate) + ($50/Month fee × 12 Months)
= $750

Thus, the cost of maintaining this stray account balance is 15% of its current account balance. The treasurer decides to close the account at once and move the funds into a more heavily-used account.

The ongoing concentration of accounts has an additional benefit, which is that the smaller number of remaining banks will see that more cash is being stored in their accounts, which may give a company slightly more bargaining power with its banks.

Cash Concentration Alternatives

A cash concentration system is not a requirement. It is extremely helpful in situations where there are many scattered accounts that are not under central control, but is not cost-effective where that specific scenario does not arise. In particular, consider alternatives to or modifications of cash concentration under the following circumstances:

- **Small local balances.** There may be a number of small accounts in which modest credit balances are maintained. This scenario is most common where there are small-scale retail operations at the local level. It is too expensive to use cash sweeps for such a large number of accounts. Notional pooling may not be possible if there are a number of accounts operated by different banks. In short, this scenario probably calls for locally controlled accounts.

- **Independent subsidiaries.** Senior management may have implemented a corporate structure that is essentially "hands off," allowing local managers considerable leeway to conduct operations as they see fit. If so, instituting any type of cash concentration system may be seen as the first step in the redistribution of power to the corporate staff, and so will not be allowed. A possible alternative is to use notional pooling, where cash concentration is essentially invisible at the local level.
- **Slow cash buildup.** What if the amount of cash in some accounts only builds up over a long period of time? It could be overkill to continually extract small-dollar balances from these accounts on a daily or even weekly basis. Instead, consider a manual review of these accounts at very long intervals, such as quarterly or semi-annually, with a manually-initiated cash sweep at that time.
- **Country restrictions.** A company may operate within a country that imposes severe restrictions on cash flows into or out of the country. If so, cash concentration systems can still be attempted within the country, as long as cash is never shifted to pools outside of the country.

Accounting for Cash Concentration Transactions

When cash is physically removed from the bank account of a subsidiary and moved into a concentration account, the cash that had formerly been listed on the balance sheet of the subsidiary is now listed as an intercompany loan receivable from the corporate parent. This means that the funds flow is from the most liquid account (cash) to a less liquid account (a note receivable). Since this transaction may make a subsidiary appear less likely to meet its short-term obligations, the sweeping arrangement should be clearly stated in the disclosures that accompany the financial statements of the subsidiary.

If a subsidiary has a negative cash balance that is offset by funding from the corporate parent, this is recorded as an increase in the subsidiary's cash account and an increase in its intercompany loan payable account. Again, the situation should be explained in the disclosures that accompany the financial statements of the subsidiary.

Notional pooling does not require any accounting transactions related to the movement of cash, since there are no movements—cash remains in local accounts.

For most cash sweeping and notional pooling, interest income should be recorded at the subsidiary level. This calls for an increase in the interest income account at the subsidiary level, accompanied by either an immediate increase in the local cash account (for notional pooling) or an increase in the intercompany loan receivable from the corporate parent (for cash sweeping).

EXAMPLE

Suture Corporation has instituted a cash sweeping system. In January, the system shifts $100,000 of cash from the Anesthesia subsidiary into a concentration account, from which the company earns interest income at an annualized rate of 4%. For January, these earnings are $333. From the perspective of the Anesthesia subsidiary, the related journal entries are:

	Debit	Credit
Intercompany loans receivable	100,000	
Cash		100,000

	Debit	Credit
Intercompany loans receivable	333	
Interest income		333

From the perspective of the Suture parent company, the related journal entries are:

	Debit	Credit
Cash	100,000	
Intercompany loans payable		100,000

	Debit	Credit
Cash	333	
Interest income		333

	Debit	Credit
Interest income	333	
Intercompany loans payable		333

On the Suture books, the first interest income entry records the receipt of cash resulting from the invested funds, while the second entry records the income as a liability payable to the Anesthesia subsidiary.

The Cash Sweeping Procedure

When a company has a number of subsidiaries, a common treasury activity is to periodically sweep all unneeded cash from the accounts of subsidiaries into a central concentration account that is used for investment purposes. Transferring funds in this way creates an intercompany loan from the subsidiaries to the parent company, on which the company should make inter-company interest payments. These actions are needed to derive the correct statement of financial position and profitability of each subsidiary. The procedure for cash sweeping is outlined below:

Tip: Wherever possible, use *automated* cash sweeps into the concentration account. This eliminates all treasury staff time that would otherwise be needed to transfer funds. The following procedure assumes that automated sweeps are being used.

1. **Calculate inter-company loans.** At the end of each reporting period, use bank statements to determine the amount of cash that was swept from the various subsidiary cash accounts into the corporate parent's cash concentration account. Add to this amount the beginning balance of any inter-company loans from the subsidiaries. This information is needed to calculate the amount of interest to credit to each subsidiary.
   Control issues: Consider tracking cash sweeps from the bank statements for the bank accounts of the subsidiaries to the bank statement of the cash concentration account. If there is a difference between the two sets of information, contact the bank for an explanation.

2. **Deduct debit balance replenishments.** The parent company may have issued funds to the subsidiary bank accounts during the period to offset debit balances. If so, deduct these amounts from the inter-company loans.
   Control issues: As was the case in the last step, consider tracking these replenishments through the bank statements of both the parent company *and* its subsidiaries. If there is a difference between the two sets of information, contact the bank for an explanation.

3. **Calculate average loan balance.** Calculate the average amount of inter-company loans outstanding during the period. The easiest approach is to add together the beginning and ending loan balances for the period and divide by two. An alternative is to determine the actual balance on each day of the month. Either approach can be used to derive the inter-company interest due to each subsidiary.

4. **Determine interest rate.** Obtain the interest rate earned by the company on its investments during the reporting period.
   Control issues: Document the source of the interest rate, since this information may be reviewed by the company's auditors and/or outside tax auditors.

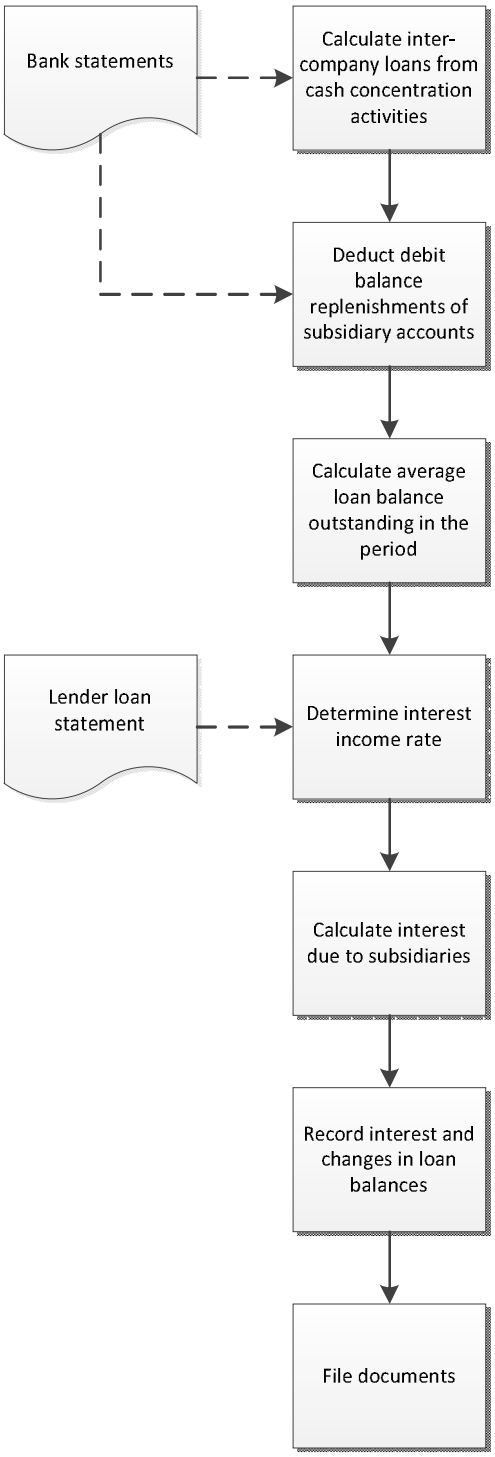
5. **Calculate inter-company interest.** Multiply the interest rate from the preceding step by the average loan balance for the month for each subsidiary.
   Control issues: Compare the amount of interest to be credited to each subsidiary to the amount calculated for them in each of the past few accounting periods, to see if the calculation is consistent.

6. **Record loans and interest.** Compile the incremental change in intercompany loans from subsidiaries and interest payable to subsidiaries, and record this information in a journal entry. Forward the journal entry, along with copies of supporting documentation, to the general ledger accountant for entry into the general ledger.
   Control issues: After the financial statements are released, the treasury staff can compare the intercompany loan balances and interest income listed in the financial statements to its own records, and bring any issues to the attention of the general ledger accountant.

7. **File documents.** Assemble the documentation of loan balances and allocated interest and file it by accounting period. This information may be needed as backup for the amount of inter-company loans and interest recorded in the company's accounts.
   Control issues: Consider storing this information in three-ring binders, to make it easier to keep the information in order by date.

   The following exhibit shows a streamlined view of the cash concentration procedure.

Cash Concentration Process Flow



Chapter Summary

The need for a cash concentration system depends upon the structure of a business. If the organization is designed to be top-down, with tight oversight by a corporate group, then there will probably be a cash concentration system that is managed from above. Conversely, if senior management goes to great lengths to diffuse responsibility down into an organization and keep the corporate group lean, then the management philosophy of the company may keep it from ever installing a cash concentration system—irrespective of any cost-benefit analysis.

If the decision is made to engage in cash concentration, the treasurer needs to decide upon the level of automation that will be used. Any system that requires the ongoing, detailed attention of the treasury staff on a frequent basis is likely to fail, simply because there are so many accounts to be monitored every day. Instead, the best solutions are either those handled automatically by the company's bank, or only at long intervals on a manual basis.

Finally, there are distinct differences between the cash sweeping and notional pooling methods of cash concentration. Use the following table to determine which one is the better alternative for your specific circumstances:

Comparison of Cash Sweeping and Notional Pooling

Operational Issue	Cash Sweeping	Notional Pooling
Administrative effort	Considerable effort is needed to track intercompany loans arising from sweep activities	Minimal, since there are no cash transfers or intercompany loans
Interest allocation to subsidiaries	The calculation can be automated	The calculation can be automated
Cross-border transactions	Foreign currency conversions are required	Foreign currency conversions not required
Prohibitions on cross-border cash transfers	Can keep cash sweeps from taking place	Is not a limitation, since cash is not moved
Accounts with multiple banks	Can still be accomplished, though manually-initiated transactions may be required	Generally not possible for accounts located outside of the bank providing notional pooling services
Local control of cash	Not possible, since cash is being physically centralized	Possible, since cash is not being moved
Legality	Generally allowed in most countries	Prohibited or restricted in some countries

The preceding table shows that notional pooling is the generally preferred approach for most decision points involving cash concentration systems. However, since it only works for accounts administered by a single bank and is not allowed in some countries, it is quite possible that a business will need to install a mix of the two systems.

Review Questions

1. Cash concentration is particularly useful:
    A. For a large number of dispersed retail stores
    B. For a large manufacturing operation
    C. For a company providing services under a small number of national contracts
    D. For a software company selling through a website

2. A zero balance account:
    A. Is funded just enough to pay for presented checks
    B. Always has a credit balance
    C. Is designed to retain deposited funds
    D. Retains a debit balance

3. An automated cash sweep can trigger:
    A. Interest income recognition at the local level
    B. Excessively large sweeps that result in debit balances
    C. A covenant breach on a loan agreement
    D. A fraud audit

4. A downside of notional pooling is:
    A. Being able to avoid the physical movement of cash
    B. Its prohibition in some countries
    C. The inability to allocate interest income to subsidiaries
    D. The inability to invest funds automatically

5. A periodic examination of _____ accounts is useful for reducing account servicing fees.
    A. General ledger
    B. Notional pooling
    C. Zero balance
    D. Low-usage

Review Answers

1. A. **Correct.** Cash concentration is useful for a large number of dispersed retail stores, since there are many bank accounts.
   B. Incorrect. A manufacturing operation may only use a small number of bank accounts.
   C. Incorrect. A small number of national contracts probably funnel through a small number of bank accounts.
   D. Incorrect. Sales through a website probably route through a single bank account.

2. A. **Correct.** A ZBA is funded just enough to pay for presented checks.
   B. Incorrect. A ZBA is designed to have no balance after presented checks have been processed.
   C. Incorrect. Unneeded cash is shifted out of a ZBA.
   D. Incorrect. Cash is shifted into a ZBA to offset any debit balance.

3. A. Incorrect. Sweeps tend to centralize interest income recognition.
   B. Incorrect. An automated sweep should not create a debit balance situation.
   C. **Correct.** A cash sweep can breach a loan covenant.
   D. Incorrect. Sweeping transactions are not an indicator of fraudulent activities.

4. A. Incorrect. Avoiding the movement of cash is an attribute of the system.
   B. **Correct.** Notional pooling is prohibited in some countries.
   C. Incorrect. Some notional pooling systems can allocate interest income back to subsidiaries.
   D. Incorrect. A notional pooling system can invest funds automatically.

5. A. Incorrect. General ledger accounts are internal to a company, so banks cannot charge fees for them.
   B. Incorrect. Notional pooling is a system, rather than an account.
   C. Incorrect. A zero balance account is a necessary part of a cash pooling system.
   D. **Correct.** A low-usage account may be piling up unnecessary account servicing fees.

Chapter 7
Types of Payments

Learning Objectives

- Identify the key advantage of a bank draft
- Pinpoint a characteristic of a global ACH system
- Determine what a standby letter of credit is used for

Introduction

The type of payment method that a company uses to pay its suppliers and employees has a considerable bearing on the timing of when cash departs a company's bank accounts, which in turn impacts the cash planning of the treasury department. This chapter gives an in-depth understanding of the different types of payments, including the best usage of each one, and their comparative advantages and disadvantages.

Cash Payments

While cash is still the predominant form of payment by customers in some retail environments, it is an increasingly rare mode of payment to a supplier. Cash as a form of payment is mostly relegated to unplanned expenditures for incidental items (which are commonly handled through petty cash reimbursements), and for tips. Cash still has some applicability when paying temporary workers who do not have bank accounts, as is the case in the agricultural sector.

Petty cash is a small amount of cash that is kept on the company premises to pay for minor cash needs, such as office supplies, cards, flowers, and so forth. It is stored in a petty cash drawer or box near where it is most needed. There may be several petty cash locations in a larger business, probably one per building or even one per department.

To set up a petty cash fund, the cashier creates a check in the amount of the funding assigned to a particular petty cash fund (usually a few hundred dollars). Alternatively, the cashier could simply count out the cash for the petty cash fund, if there are enough bills and coins on the premises. The petty cash custodian then disburses petty cash from the fund in exchange for receipts related to whatever the expense may be. The total of the receipts and remaining cash should equal the initial amount of petty cash funding at all times, though recordation errors and theft may result in a variance.

When the cash balance in a petty cash fund drops to a sufficiently minimal level, the petty cash custodian applies for more cash from the cashier. This takes the form of a summarization of all the receipts that the custodian has accumulated. The cashier creates a new check in the amount of the receipts, and swaps the check for the receipts. The check is then cashed and converted to bills and coins. The petty cash custodian refills the petty cash drawer, which should now contain the original amount of cash that was designated for the fund.

The tight level of control just noted for petty cash shows a key concern with any type of cash payment—there is a significant risk of theft. In sum, cash has become an incidental form of payment that requires an inordinate amount of control oversight.

Check Payments

The predominant form of payment is still the check payment, though it is declining fast as procurement card and ACH payments gain ground on it. A check is a written order by the paying entity to its bank, stating a certain amount of cash to be paid to the payee named on the order. The process flow for a check payment is:

1. The paying entity creates a check and sends it to the payee.

2. The payee presents the check to its deposit bank, which is the bank at which the payee has an account into which it wants to have the funds stated on the check deposited.
3. The deposit bank contacts the drawee bank, which is the bank at which the paying entity maintains the account from which cash will be drawn to pay the payee.
4. The drawee bank withdraws cash from the paying entity's account and sends it to the deposit bank (see the Clearing and Settlement Systems chapter). If there is not sufficient cash in the paying entity's account, the payment is declared a "not sufficient funds" transaction, and is cancelled.
5. The deposit bank credits the payee's account with the cash, which is now available for use by the payee.

When the deposit bank receives a check from the payee, it cannot immediately post the payment to the payee's account, since the bank has not yet received the cash from the drawee bank. Instead, the deposit bank assigns a *value date* to the check, which is the date on which the funds will be made available to the payee. The value date may be just one day in the future, or several days longer. Some banks assign value dates that are further in the future than necessary, so that they have a short interval in which to use the cash before giving it to the payees who actually own the cash.

Technically, a check is paid "to the order of" a payee, which means that the drawee bank can pay anyone who presents the check to it, as long as the original payee endorsed the check. Thus, a check can become a negotiable instrument that could be sold to and cashed by a third party.

Float

There is a fair amount of uncertainty associated with the timing of check payments. Just because a paying company has cut a check does not mean that the recipient knows the exact date on which the related amount of cash will eventually appear in its bank account. Consider the following timing uncertainties related to check payments:

Type of Float	Duration
Time to transport the check to the payee by mail (mail float)	2-5 Days
Time for payee to deposit the check (processing float)	1-2 Days
Time required for bank to make cash available to payee (availability float)	1-3 Days
Total Time	4-10 Days

In general, *float* is defined as the time period during which funds are in transition between the various stages in the payment process. For example, *mail float* is the interval from when a check is mailed to a payee and when the payee receives it. Similarly, *processing float* is the time required for the payee to record a payment in its accounting system and deposit the check at its financial institution. Finally, *availability float* is the time required for the funds stated on a check to be made available to the payee by its bank. In aggregate, these types of float are known as *net float*.

As the preceding table shows, even an immediate issuance of a check payment to a payee may not result in the cash appearing in the payee's bank account for as long as ten business days. The payer has no control over any of the three types of float, and so can only estimate how long it will have use of the cash amount stated on a check, before it is paid over to the payee.

Tip: To increase the mail float, always deliver mail to a smaller ancillary post office. Pickups from these offices tend to be later in the day.

The float duration associated with checks has gradually compressed over time, especially since checks started to be digitized for electronic transmission to and between banks. Nonetheless, even the fastest-possible processing of a check payment is unlikely to result in a float of less than four business days.

From the perspective of the treasurer, it is possible to invest the cash related to checks that have been issued, but which have not yet cleared the bank. The proper amount to invest can be calculated manually (and conservatively) by assuming that the minimum number of days of float will occur. Alternatively, the company can use a zero balance account (as described in the Cash Concentration Systems chapter), which automatically pays for presented checks and leaves all other cash in a central account, from which it can be invested.

Advantages of Checks

There are a number of reasons why check payments have succeeded so well, and for so long. First, they are a technologically simple form of payment from the perspective of the payer, since payments can be made entirely manually, and a copy can be retained to prove that payment was made. There is a considerable amount of back end processing, but the payer and payee do not see the check clearing process. Second, the payer can take advantage of the substantial amount of float associated with checks, so that it is possible to continue to invest cash for several days after it has (theoretically) been paid to payees. Third, a remittance advice is commonly attached to a check, which contains information about the contents of each payment; the payee uses this information to assign the payment to outstanding accounts receivable.

Disadvantages of Checks

Against these advantages are arrayed a number of problems. First, the manual nature of a check makes it easy to fraudulently alter or replicate, which can lead to substantial fraud losses. Second, the recipient of a check has to wait several days to have use of the cash represented by the check. Further, if there is not enough cash in the payer's bank account to cover a check payment, the payee receives no cash at all. Third, checks are not always accepted as a form of payment across international boundaries. Fourth, the variability in float times associated with checks makes it difficult to accurately predict them in a cash forecast. Finally, the total system cost of processing a check is surprisingly high. Consider the following expenses:

- Cost of check stock
- Cost to print and mail checks
- Bank fee to process checks
- Cost to reconcile bank account
- Cost to enroll in a positive pay fraud-prevention program (see the Positive Pay section)
- Cost to notify the bank of checks issued under a positive pay system
- Cost to cancel and replace checks that have been lost

Bank Drafts

There are circumstances where the payee wants a guarantee of payment by a bank. This situation arises when there are large payments due, such as for the purchase of real estate, and the seller does not want to take a chance that the check used to pay for the transaction will be returned due to not sufficient funds in the payer's bank account. In these situations, the payer asks its bank for a bank draft (also known as a cashier's check). The bank removes the cash from the payer's bank account and then prepares a bank draft, which is a liability of the bank. The bank earns a profit on the transaction not only by charging a fee to prepare the bank draft, but also by having use of the money until such time as the funds are made available to the payee.

A payer may also use a bank draft to make a payment in a foreign currency. In this case, the bank removes the cash from the payer's bank account, and then forwards payment to a foreign correspondent bank, which prepares the bank draft in the requested foreign currency.

The use of bank drafts has declined in favor of wire transfers directly into the bank account of the payee, since the transfer of funds is accomplished more quickly with a wire transfer.

Procurement Cards

A procurement card is the same as a credit card, except that it is organized under a company-wide system of procurement. Procurement cards are issued to authorized buyers within each department, who can buy goods up to a certain dollar limit, and within certain categories of goods and services. The company then pays the procurement card provider from a single master billing. The use of procurement cards is ideally directed at the 80% of all purchases that comprise 20% of the dollar volume of a business; thus, the cards are designed for low-cost, high-volume purchases.

The advantage of procurement cards lies in their extremely efficient nature from a paperwork perspective. The procurement card provider aggregates all purchases on a single monthly statement, which is subject to a monthly review by card users, and is then paid. This aggregation process is vastly more efficient than the cumbersome issuance of purchase orders for individual purchases, which should be restricted to only the most expensive acquisitions.

From a cash management perspective, the single large payment to the card provider can be easily scheduled on the cash forecast, rather than dealing with the myriad of smaller individual payments that it replaces.

Tip: Many card providers charge a large foreign transaction fee for purchases made in other countries, usually in the vicinity of 3%. If so, search for a card provider that does not charge this fee, or use a separate card just for international transactions that does not charge the fee.

ACH Payments

An ACH payment is an electronic funds transfer that is initiated through the Automated Clearing House (ACH) system. ACH transactions are designed to be low cost, and usually involve smaller payments in very high volume. Examples of payments made via ACH are social security payments and direct deposit payroll payments.

ACH transactions can be initiated by the payer or the payee, which means:

- A credit transaction is initiated by the payer and sends cash from its account into the bank account of the payee. This transaction requires two business days to settle. Examples of ACH credit transactions are for any supplier invoices and pension payments to retirees.
- A debit transaction is initiated by the payee and sends cash from the account of the payer into the bank account of the payee. This *ACH debit* transaction requires one business day to settle. Examples of ACH debit transactions are recurring consumer payments for utility and phone bills.

Tip: The treasurer should advocate the use of ACH debits to obtain payments from customers, since these debits allow the treasury staff to predict the timing and amounts of incoming cash flows with considerable precision.

ACH debits can be a source of fraudulent transactions, since someone other than the payer can remove cash from the payer's account. This problem is commonly dealt with by establishing debit blocks on accounts that prohibit *all* debits, or by allowing certain debits to be processed.

Advantages of ACH

A major advantage of ACH payments is the certainty of settlement timing. Once a transaction has been initiated, both parties know exactly when the related amount of cash will be removed from the payer's account and added to the payee's account. This is a boon from the cash planning perspective, and also makes life easier for anyone involved in the collection of accounts receivable.

Another major advantage of ACH is its low cost, which is just a few cents per transaction. Compare this cost to the total cost of issuing a check, which includes the cost of check stock, a mailing envelope, postage, and the labor required to prepare and mail the check.

A related benefit is that some additional information can be transmitted along with an ACH payment. For example, the recipient can also see the invoice number being paid, which is useful for recording a

payment against a specific invoice. However, this extra information cannot always be sent to the payee, so it makes sense to also send a separate notification by e-mail that provides the details of each payment.

Impact on Float

When an ACH system is installed, the payer will find that the multi-day float it was accustomed to under a check payment system has now vanished. The elimination of float accelerates the usage of cash by several days, and possibly by a week or more. However, if a company's customers begin paying by ACH as well, the float associated with incoming cash payments should also vanish, so the net effect of float reductions on *all* cash flows should net to zero.

Tip: If you can schedule payments two days early for what would normally have required a wire transfer, you can replace a $20 wiring charge with an ACH payment that costs a few cents.

Global ACH

Electronic payments using the ACH system are only possible within the United States and Canada, though similar types of transaction processing systems are available in other countries or regions, such as Australia, China, Europe, Hong Kong, India, Japan, New Zealand, Singapore, and South Korea. In order to initiate an ACH payment that crosses borders into the electronic payment system of another country, a business must enter its payment information into a portal (usually maintained by a bank) that links to the other country's payment system. This may require the entry of different types of data, in order to comply with the message formatting requirements of the other system. Many of these systems do not allow for the inclusion of remittance information along with a payment, so the payer will need to supply this information to the payee separately.

In those parts of the world that do not have systems similar to the ACH system, it may be necessary to pay by the more expensive wire transfer method, which we address in the next section.

Wire Transfers

A wire transfer is the fastest way to send funds to a payee. A wire transfer is usually confined to the larger payments, since the transaction cost is rather high, at about $20. In addition to the high cost, a wire transaction can require the most manual labor of any type of payment. Each bank to which a wire is sent may have its own unique ways of assigning funds to an account, so it is useful to contact the receiving bank for wiring instructions prior to initiating a transfer. At a minimum, the following information will be needed:

- The name and account number of the payee
- The name and address of the bank to which the funds are to be sent
- The routing number and account number to which the funds are to be sent
- The amount to be paid

The treasury staff may be able to initiate a wire transfer by accessing an on-line form in a secure part of the bank's website, which gives the company the best level of control over funds being sent. Alternatively, the information can be sent to the company's representative at the bank, who issues the wire.

Though wired funds can be in the account of the payee within a very short period, there are several timing concerns to be aware of. First, every bank has a cutoff time, after which any wiring instructions received will not be processed until the next business day. The accounting and treasury staffs must ensure that rush payments are initiated prior to the cutoff time. Second, there can be a substantial delay in the transfer of cash to a payee across international borders, possibly of several days. The international delay can be particularly prolonged when the bank initiating the wire transfer does not have a correspondent relationship with the intended recipient bank, and so has to route the payment through a third bank that has the required relationship. Third, a bank that receives a wire transfer may manually review it to ensure

that the funds are applied to the correct account, which can take time. All of these factors can contribute to a delay in the receipt of wired funds.

Tip: To ensure that payees receive funds quickly, see if they have an account at the same bank as the payer, and initiate a wire within that bank from the payer's account to the payee's account. This is an internal book transfer for the bank, which makes funds immediately available to the payee.

When the payer sends funds internationally and pays with its home currency, the receiving bank may charge the payee a startlingly high foreign currency translation fee. The payee cannot avoid this fee, since the funds must come through the receiving bank. To avoid the fee, the payer can offer to remit payment in the currency of the payee in exchange for a reduced payment. By doing so, the payer can choose among multiple foreign exchange providers to obtain the best exchange rate, which will probably result in a better exchange rate than would be offered by the payee's bank.

Another issue the payee will encounter is a *lifting fee*, which is a transaction fee charged by the receiving bank. The lifting fee may match the wire transfer fee charged to the payer by the issuing bank. Given the size of the fees charged to both parties in a wire transfer transaction, it may make sense for the buyer and seller to agree to a different form of payment that is less expensive.

Tip: To avoid payment delays and reduce wiring fees, consider funding an account within any country where the company routinely issues payments, and eliminate wire transfers in favor of in-country payment systems that are paid from that account.

The Letter of Credit

A letter of credit is used extensively in international trade, where it provides an assured form of payment for the exporter. The key element in the letter of credit is that a guarantee of payment is made by a bank, rather than the importer, which represents a major reduction in the credit risk of the exporter. The basic process flow for a letter of credit payment is:

1. The importer and exporter agree upon the terms and conditions under which the exporter will ship goods to the importer.
2. The importer applies to its bank, known as the *issuing bank*, for a letter of credit. This involves filling out a bank-provided letter of credit form.
3. The issuing bank issues a letter of credit to the exporter's bank, stating that it (the issuing bank) is obligated to pay the exporter's bank if the exporter fulfills the conditions stated in the letter of credit (usually the provision of an invoice and proof of delivery, though more comprehensive documentation may include certifications of insurance and product quality). To cover its liability, the issuing bank restricts an amount of cash in the importer's bank account equal to the amount of the line of credit, or it may restrict a portion of the line of credit that the importer has with the bank.
4. Once the shipment terms have been completed, the exporter presents the mandated documents to its bank (the *confirming bank*), which examines the documents and then issues payment. If the exporter's bank does not want to be involved in the payment, it transfers the documents to the issuing bank, which pays the exporter.
5. Upon notification of payment by the exporter's bank, the issuing bank removes the restricted cash from the importer's bank account or charges the importer's line of credit, and then forwards payment to the exporter's bank.

EXAMPLE

Suture Corporation is planning to sell one of its cancer scanning beds to Sydney Scientific, which is located in Australia. The sale transaction is priced at $350,000. Suture is delivering the unit to Sydney, with an expected arrival date of September 30. Suture's bank is Wells Fargo, and Sydney Scientific's bank is Commonwealth Bank. The process steps for the related letter of credit transaction are:

1. Sydney asks Commonwealth Bank to issue a letter of credit. Commonwealth does so after reviewing the deal documentation. Commonwealth also restricts $350,000 of the available funding on Sydney's line of credit with the bank.
2. Wells Fargo confirms the letter of credit and sends the documentation, plus a confirmation advice, to Suture.
3. Suture transports the scanning bed to Sydney.
4. Suture completes all required documentation and presents it to Wells Fargo. The bank reviews and approves the documentation and pays Suture the $350,000, less transaction fees.
5. Wells Fargo forwards the documentation to Commonwealth Bank, which pays Wells Fargo. Commonwealth also charges its line of credit with Sydney for $350,000, plus transaction fees.

The letter of credit has been a mainstay of international trade for many years, since it ensures the flow of funds from importers to exporters. However, there is also a great deal of paperwork, which increases the time required by the buyer, seller, and intermediary banks to process payment. Also, there is a risk that a flaw in submitted documentation will trigger a denial of payment by a bank, which is a serious problem for an exporter. Due to these deficiencies, it is increasingly common for international business partners to find other, less onerous ways to pay each other, such as through wire transfers or local electronic payment systems.

The Standby Letter of Credit

A variation on the basic letter of credit concept is the *standby letter of credit*. This is a guarantee by a bank that it will pay a supplier on behalf of a customer if the customer is unable to provide payment. A supplier is most likely to request a standby letter of credit in international trade situations, and especially when dealing with a new customer. If requested, the customer applies to its bank for the letter of credit, which reviews the credit quality of the customer. If the bank is willing to take the risk, it charges a fee to the customer, which is usually a percentage of the face amount of the letter of credit, and issues the letter of credit to the bank of the supplier. The term of a standby letter of credit is usually for one year, which is a sufficient period of time for the underlying transaction to be completed and paid. A standby letter of credit can be quite expensive, ranging from 1% to 10% of the face amount of the letter of credit, and so is to be avoided by the customer in a business transaction to the greatest extent possible.

Positive Pay

There is a potential for fraud risk when a company issues payments by check, since checks can be altered or replicated. It is possible to intercept fraudulent checks when they are presented at the bank, under a system called *positive pay*. A company that elects to use positive pay sends a file to its bank whenever it creates checks, in which are stated the check number, check date, and amount paid. The bank then loads this information into its system, and compares it to the information on any presented checks. If there is a mismatch or no match at all, the bank refuses to accept a presented check.

Positive pay is the most effective way to eliminate fraud, since it monitors payment information at the one bottleneck through which all check payments must pass. However, there are also several problems with the system that make companies less willing to use it, which are:

- **Cost.** Banks charge a monthly fee for the positive pay service.
- **Data forwarding.** The accounts payable staff must remember to forward check information to the bank, which is not so easy when manual payments are being made that fall outside of the normal check processing procedure.
- **Bank liability.** Articles 3 and 4 of the Uniform Commercial Code (UCC) state that losses from counterfeit or forged checks are the responsibility of the bank, though the payer must also exercise "due care" in its payment process. The UCC statement essentially means that banks are charging their customers for a positive pay system that reduces the liability of the banks. To limit their losses, banks have inserted language into the agreements governing their customer accounts,

in which the banks state that they are absolved from liability when measures such as positive pay are offered to their customers, but are not utilized.

A variation on the positive pay concept is *reverse positive pay*, under which a bank issues to a client company a listing of all checks presented to it during the day. The company has a narrow time frame within which to review the information, and can contact the bank if any presentation information does not look correct. Reverse positive pay is useful for those organizations that do not want to constantly send payment updates to the bank.

The Check Payment Issuance Procedure

The predominant mode of payment to suppliers is still the printed check, though the use of ACH payments and wire transfers is also common. The check payment issuance procedure is outlined below, while the procedural variations for ACH payments and wire transfers are noted in the next section.

1. **Print payment due dates report.** Any accounting software package includes a standard report that itemizes the invoices that are now due for payment. Print this report prior to the next scheduled date on which it makes payments. This report only works if the accounting staff has previously entered the standard payment terms for each supplier in the vendor master file in the accounting software. The system should automatically present invoices that are available for early payment discounts.
   Control issues: It is important not to miss due dates, so running the due dates report should be on the daily schedule of activities in the accounting department.

2. **Approve payments.** Review the report to see if any prospective payments should be delayed. If so, cross out these items.
   Control issues: To ensure that only the approved items are paid, consider crossing out line items in ink, initialing the crossed-out items, and later matching printed checks to the report.

3. **Select payments.** Access the payments module in the accounting software and select all approved invoices listed on the payment due dates report. Print a preliminary check register and match it against the approved payment due dates report to ensure that only approved invoices are being paid.
   Control issues: The matching process noted here is quite important; otherwise, the software may automatically pay *all* invoices that are currently due for payment.

4. **Obtain check stock.** Go to the locked cabinet where check stock is stored, and extract a sufficient number of checks for the check run. Relock the cabinet.
   Control issues: It is critical to keep unused check stock locked up at all times. We will return to this issue later, when we log out the range of check numbers used. Also, if there is a check stamp or plate, store it in a different locked location, which makes it more difficult for someone to fraudulently create a check payment.

5. **Print checks.** Enter the beginning check number for the unused checks into the accounting software. Print the checks. Verify that the checks were properly aligned and that all checks were printed. If not, reprint the batch of checks. Otherwise, accept the check run in the software and print a final check register.
   Control issues: It is useful to match the final check register to the approved payment due dates report, to ensure that the accounts payable staff has only paid authorized invoices.

6. **Return unused checks.** Return all unused checks to the locked cabinet. Note in a check usage log the check number range that was used. This step is used to uncover cases where checks may have been fraudulently removed from the stock of unused checks.

Control issues: The check usage log should be stored in a locked location, so that no one can both steal unused checks and modify the log to hide the theft.

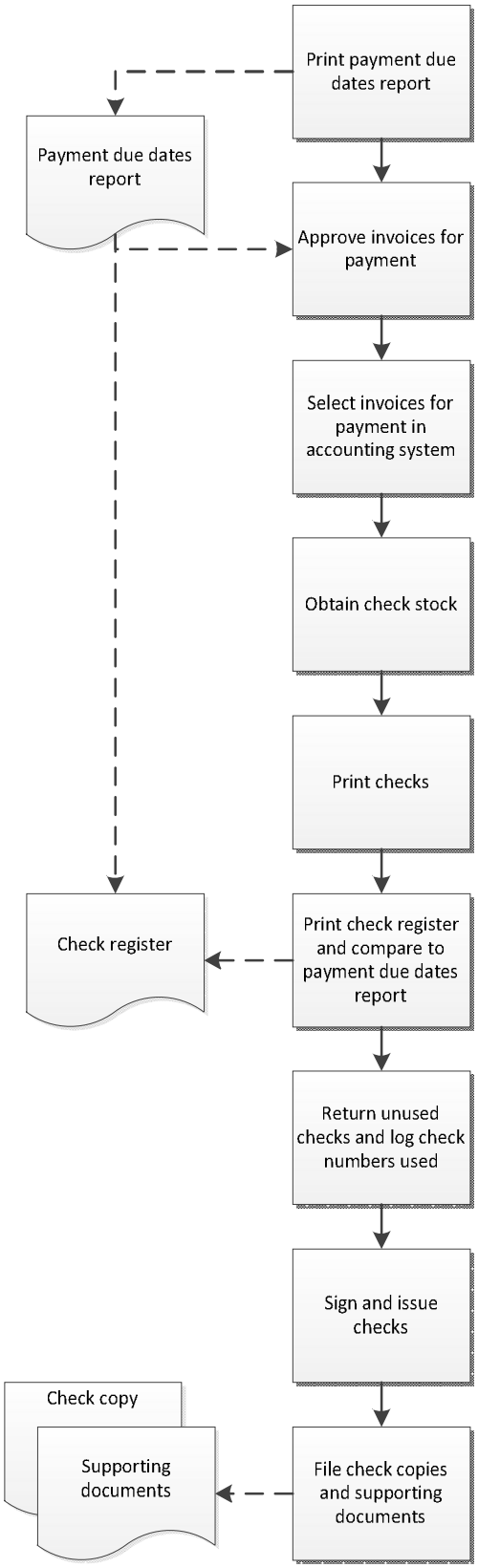
7. **Sign checks.** Attach all supporting documentation to each check. Then schedule a check signing meeting with an authorized check signer. Be available during the meeting to answer any questions posed by the check signer. The check signer should examine the supporting materials for any check where there is a concern about the payment. If the check is for an unusually large amount, consider requiring an additional signature on the check, thereby providing an additional level of authorization.
   Control issues: Check signing is a control, but may not be necessary in cases where the purchasing department has authorized a payment in advance with a signed purchase order. If so, a signature stamp or plate can be used instead of a check signer.

8. **Issue checks.** Attach any required remittance advices to checks, and mail them to recipients. Then attach the company's copy of remittance advices to supporting documents, and file them by supplier name.
   Control issues: In a purely manual payables environment, there is a risk of paying an invoice more than once, so a reasonable control is to stamp each paid invoice, or even perforate it, with a "paid" stamp. This control is not needed in a computerized environment, where the accounting system tracks the payment status of all invoices.

9. **Issue positive pay file (optional).** If the company uses a positive pay system (see the Positive Pay section), compile information about the newly-printed checks into a file and send it to the bank. The bank then matches submitted checks against this file and rejects those not listed in the file.
   Control issues: The positive pay notification must encompass manual checks. Otherwise, a special check may be written outside of the normal check printing process, and then be rejected by the bank because no positive pay file was submitted for it.

The following exhibit shows a streamlined view of the check payment issuance procedure, not including the optional use of positive pay.

Check Payment Issuance Process Flow



Payment Procedure Alternatives

The preceding procedure was designed for the issuance of payments by check. However, payments can also be made by direct deposit or wire transfer. These two alternatives are:

- **ACH.** This involves payments using the Automated Clearing House (ACH) system, which is an electronic payment. The procedure is the same as the one used for check payments, through the point where payments are approved. After that point, the accounts payable staff either prepares an ACH file for transmission to the company's bank, or accesses the bank's secure ACH site and manually sets up each payment. The bank then sends a confirmation to the company, stating the amounts and payees associated with each ACH transaction. The accounts payable staff notes in the accounting system that the related invoices were paid by ACH.
  Control issues: There is no check signer involved in ACH payments, so consider requiring a second person to review and approve the transactions prior to their issuance.

- **Wire transfer.** The procedure for payments by wire transfer is identical to the one used for ACH, except that the approval of an authorized person is usually required.
  Control issues: There is a significant risk of someone using wire transfers to fraudulently send large amounts of company funds to unauthorized accounts. Consequently, the wiring procedure should be armored with multiple layers of approvals.

Tip: Electronic payments are frequently made outside of the normal flow of accounts payable transactions, which means that someone has to manually record these payments in the accounts payable system. If they forget to do so, there is a risk that duplicate payments will be made. To mitigate this risk, set up a default payment type for each supplier in the vendor master file, and consider any variation from that payment type to be a policy violation that requires extra approvals.

Chapter Summary

A company will likely use a mix of payments. Over time, the types of payments have changed, resulting in the near-replacement of cash payments by procurement cards. We can reasonably predict that cash payments will be very nearly eliminated in the near future, especially if companies refuse to operate petty cash systems. However, we cannot so easily predict the demise of check payments. Given their extreme ease of use, check payments will probably continue to be used in great quantities through the foreseeable future, though ACH payments and procurement cards will certainly make considerable inroads on the quantity of checks issued. Other forms of payment, such as wire transfers, bank drafts, and letters of credit, are designed for special situations, and so will likely continue to be used in roughly the same proportions in the future.

In the following table, we have noted the characteristics of the various types of payment, and the situations in which they should be used.

Characteristics of Payment Methods

Payment Method	Characteristics and Applicability
Cash	Best for unplanned expenditures, tips, and payments to unbanked temporary workers. Requires strong controls due to risk of theft. Not recommended as a form of payment.
Checks	Easy to use in a manual system, and payers can temporarily retain the use of cash through float. Its total usage cost is high, and there is a risk of fraud.
Bank drafts	Limited to use when a supplier wants a guaranteed payment. Requires expensive manual processing and a bank fee. Not recommended for high volume usage.
Procurement cards	Efficient method for making high-volume, low-cost purchases. There is a risk that unauthorized purchases will be made, and statement reconciliation can be time-consuming. Should be a part of any payment system.

Payment Method	Characteristics and Applicability
ACH (standard)	Very efficient and low-cost form of electronic payment. Can require setup time, so not good for one-time payments. Highly recommended for repetitive payments to long-term business partners.
ACH (debit)	Electronic payment initiated by payee. There is a risk of fraud, and the payer does not have control, so its usage tends to be limited to small recurring payments.
Wire transfers	Used for fast payments of large amounts. Can be delayed for cross-border payments, may require manual setup, and fees are high. Replace with ACH payments whenever possible.
Letter of credit	Established form of payment for international transactions. Requires considerable paperwork, and so may be avoided in favor of more efficient payment systems when business relations are well-established.

Review Questions

1. Cash is still a common form of payment in the _____ industry.
    A. Retail
    B. Manufacturing
    C. Software development
    D. Government

2. The _____ is not considered a cost of paying with checks.
    A. Cost of check stock
    B. Lifting fee
    C. Bank fee to process checks
    D. Cost to mail checks

3. The ACH payment system is designed for _____ payments.
    A. High value, low volume
    B. Low value, low volume
    C. High value, high volume
    D. Low value, high volume

4. A letter of credit:
    A. Represents funds made available by a lender to a borrower
    B. Is the same as a bank draft
    C. Represents an assured form of payment for an exporter
    D. Places primary payment risk on the issuing bank

5. Positive pay is used to:
    A. Reassure customers that a company has paid them
    B. Provide early payment to suppliers in exchange for a discount
    C. Avoid the acceptance of fraudulent checks
    D. Provide credit insurance for customers whose credit is questionable

Review Answers

1. A. **Correct.** Cash is still a common form of payment in the retail industry.
   B. Incorrect. Cash is rarely used in the manufacturing sector.
   C. Incorrect. Cash is rarely used in the software development sector.
   D. Incorrect. Cash is rarely used in the government sector.

2. A. Incorrect. A valid cost of paying with checks is the cost of check stock.
   B. **Correct.** A lifting fee is associated with a wire transfer.
   C. Incorrect. A valid cost of paying with checks is the bank fee to process checks.
   D. Incorrect. A valid cost of paying with checks is the cost to mail checks.

3. A. Incorrect. Wire transfers are designed for high value, low volume payments.
   B. Incorrect. No systems are designed for low value, low volume payments.
   C. Incorrect. No systems are designed for high value, high volume payments.
   D. **Correct.** The ACH system is designed for low value, high volume payments.

4. A. Incorrect. A line of credit represents funds made available by a lender to a borrower.
   B. Incorrect. A bank draft is a bank-guaranteed payment, irrespective of any further performance by the payee.
   C. **Correct.** A letter of credit represents an assured form of payment for an exporter.
   D. Incorrect. The issuing bank restricts funds in the payer's bank account in the amount of the letter of credit, so the risk is on the payer.

5. A. Incorrect. Positive pay is not used to reassure customers regarding payment.
   B. Incorrect. Supply chain financing provides early payment in exchange for a discount.
   C. **Correct.** Positive pay is used to avoid the acceptance of fraudulent checks.
   D. Incorrect. Credit insurance relates to accounts receivable, while positive pay is for accounts payable.

Chapter 8
Working Capital Enhancements

Learning Objectives

- Identify an action that will reduce the investment in accounts receivable
- Recognize examples of the holding costs associated with inventory
- Pinpoint how to reduce the amount of safety stock
- Identify a strategy to reduce a company's investment in working capital

Introduction

A company can invest a startling amount of cash in working capital. This is an area in which businesses tend to be somewhat lax in monitoring working capital levels, and especially the reasons why there are changes in working capital. The result is typically a high degree of variability in working capital levels, to which the treasurer must respond with additional funding or an unplanned surge in investments. In this chapter, we discuss the impact of working capital on cash management, and then describe a number of enhancements to working capital that can cause major reductions in the cash needed to fund it.

The Impact of Working Capital on Cash Management

If the treasurer were to only prepare a cash forecast and then invest or locate funds based on the forecast information, he would be placed in an entirely defensive position; that is, the treasury staff would have no control over the rest of the company's actions that influence its cash position. An alternative is to take an active role in multiple areas of the company in order to proactively increase cash flow.

A particular area of opportunity for the treasurer is *working capital*. Working capital is primarily comprised of accounts receivable, inventory, and accounts payable. Accounts receivable and inventory are large consumers of cash, while accounts payable is essentially cash borrowed from suppliers, and so is a provider of cash.

The policies and systems used to manage these three areas can have a major impact on the amount of cash needed to operate a business. Constant attention to working capital is of particular importance in situations where a company is trying to fund rapid growth, or has minimal access to cash from outside sources. In these cases, it may make sense to create a team that continually analyzes how to wring more cash out of working capital.

The treasurer does not need to have direct supervisory control over the areas that use working capital, but should influence how they are operated in order to minimize their use of cash. In the following sections, we will explore the specific policies and systems that can minimize the investment in working capital.

Accounts Receivable Enhancements

If a business offers sales on credit, it is committing to a potentially massive investment in accounts receivable, for which the treasurer must be able to secure sufficient funding to pay for the company's granting of credit. For example, a company with $10 million of sales offers credit terms to its customers, whereby they commit to pay the company 30 days after the invoice date. All of the customers (understandably) accept the credit terms. Due to collection difficulties and the time it takes for checks to travel from customers to the company, the actual number of days during which accounts receivable are outstanding turns out to be 40 days. This represents receivables turnover of approximately nine times per year (calculated as 365 days ÷ 40 days). This means that the company routinely has about $1.1 million of accounts receivable outstanding (calculated as $10 million annual sales ÷ 9 receivable turns per year).

Thus, the company is investing an average of $1.1 million in its credit granting program, which is a substantial amount of cash for a $10 million company. This brief calculation of committed cash is subject to three additional points:

- **Bad debts.** In a cash-in-advance or cash-on-payment environment, there are no bad debts. In a credit environment, some invoices will never be paid, so there will be an additional reduction in cash caused by these bad debts.
- **Seasonality.** The $1.1 million cash investment noted in the preceding example assumes that sales are consistent from period to period. In reality, many businesses have a seasonal element, which means that the amount of cash committed to accounts receivable could sometimes spike to a much higher level, which can be a major concern for the treasurer.
- **Actual out-of-pocket cash.** Just because a company has a certain amount of accounts receivable outstanding does not mean that it has actually invested the same amount of cash in those receivables. Realistically, a company has only invested in those receivables the cash required to build or supply the related products or services. The remainder of a receivable represents the profit on each sale. Thus, the cash tied up in a high-margin software sale could be negligible, whereas the cash associated with the sale of heavy equipment could be substantial.

The preceding factors mean that the actual amount of cash invested in accounts receivable could differ wildly between companies with the same sales volume. Thus, the treasurer should engage in considerable receivables modeling to estimate the amount of cash that will be required before there is a decision to offer credit terms or alter existing terms.

The "accounts receivable" area encompasses the granting of credit to customers, the issuance of invoices, and the subsequent collection of customer payments. We deal with each of these topics through the remainder of this section.

Credit Enhancements

The enhancement of accounts receivable can begin in the credit granting process, before a customer is even allowed to buy from the company on credit. The company needs to decide upon the proper amount of credit that it will grant customers. Strictly from the perspective of the treasurer, it makes the most sense to adopt a relatively restrictive credit policy, so that sales on credit are only made to those customers most capable of paying the company in full and within credit terms.

Of course, the situation is considerably more complex than simply adopting a stringent credit policy. The financial analysis staff may have determined that the company will earn more profits if it loosens its credit policy to allow more sales to customers whose finances are more questionable. The result may indeed be higher profits, though at the cost of increased bad debts and an increase in accounts receivable as the days required to obtain payment expand. This is particularly likely when the gross profit associated with each product or service sold is quite high, since the company has little to lose if a customer does not pay. Conversely, if profit margins are slim, management is more likely to be prudent in expanding its use of credit, and will be more likely to listen to the treasurer about maintaining a restrictive credit policy. In short, the use of cash is only one factor considered in decisions to adjust a company's policy for granting credit.

It is relatively common for the treasurer to have direct authority over the operations of the credit department. If so, this is a prime area in which the treasurer can have a direct impact on changes in working capital. In addition to careful control of the amount of credit offered, any of the following actions may contribute to a reduction in the investment in accounts receivable:

- **Outside financing.** Arrange with a third-party lender to extend a loan or lease to the customer. By doing so, the company obtains cash immediately from the lender, rather than investing its own cash in accounts receivable.
- **Distributor access.** If there are distributors of the company's products, refer the customer to one of the distributors. As was the case with outside financing, this means that the distributor takes on the accounts receivable burden.

- **Shorten payment interval.** Cash flow can be accelerated by requiring that customers pay sooner. This can be difficult to achieve with larger customers who are more inclined to pay late, no matter what the payment terms may be.

Billing Enhancements

Once credit issues have been decided upon, consider the efficiency of the customer billing process. Ideally, it should result in an accurate invoice being delivered to the accounts payable system of a customer as soon as possible after a sales transaction has been completed. By accelerating this process, customers pay faster, which reduces accounts receivable. The treasurer should consider the current state of the following process issues:

- **Invoice preparation time.** All customer invoices should be prepared within one day of the delivery of goods or services to a customer. The accounting staff may try to delay invoice preparation in order to do so more efficiently in a batch, but this harms the speed of cash receipt, and so should not be tolerated. If a company bills its customers at the end of each month for services provided during the month, see if customers will find it acceptable to instead be billed twice a month; this can greatly accelerate the speed with which payments are received.
- **Invoice accuracy.** If an invoice is for a large amount, is difficult to compile, or contains volumes of explanatory text, have it reviewed for accuracy before releasing it. Otherwise, customers may delay payment if they find an error.
- **Invoice delivery.** The process of mailing an invoice, having it delivered by the postal service, and then delivered internally to the customer's accounts payable department can consume a number of days. Instead, consider using any form of electronic transmission, and follow up to verify receipt.
- **Payment delivery.** The best form of customer payment is an electronic payment, since no additional internal processing is required. Instead, it is delivered directly into the company's bank account. If this option is not available, set up a lockbox arrangement with the company's bank. Under a lockbox arrangement, customers are asked to send their check payments to the lockbox address, where the bank opens the mail and deposits the checks into the company's account. The use of a lockbox typically reduces the time required to process a payment by one or two days.

Collection Enhancements

The final task needed to reduce accounts receivable is an active collections function. There should be a system in place for economically collecting payment on overdue invoices. The exact sequence and timing of events will depend upon the industry, but the following is a reasonable sequence of events to consider:

1. **Administrative call.** Contact customers in advance of payment dates for the larger invoices, to verify that payment will be made on the expected date and in full. If not, making this early administrative call gives you time to rectify the situation before the payment due date arrives.
2. **Dunning message.** If payments are slightly overdue and the amounts are not large, issue a dunning letter or e-mail message, politely reminding customers of their obligations to pay.
3. **Telephone call.** After it becomes clear that an invoice will not be paid on time, the collections staff should call the customer, ascertain the reason for the payment delay, and either obtain a promise to pay as of a specific date or begin the process of resolving the underlying issue. Resolving the issue may involve a number of approaches, such as:
    - Return the purchased goods
    - Adopt a payment plan
    - Place a credit hold on the customer
    - Accept payment in kind
    - Accept a reduced payment
    - Replace the purchased goods

4. **Attorney letter.** If the customer is still not responsive, consider contracting with a local attorney to issue an attorney letter. This approach relies upon the involvement of an attorney and a mildly threatening letter to convince a customer that paying is less expensive than a lawsuit in the near future.
5. **Small claims complaint.** Fill out a small claims court form and send a copy to the customer. This does not mean that you have filed the form with the court, only that you have filled out the paperwork. The receipt of such an official-looking document might convince the customer that you are serious. Small claims courts allow only smaller claims, so this approach is only available for unpaid invoices totaling less than $10,000.
6. **Collection agency.** If all of the preceding approaches have not worked, consider shifting the claim to a collection agency, which may engage in more vigorous collection techniques. These agencies may charge up to one-third of the total amount of each invoice as their fee (if they achieve a collection), so use the preceding techniques first, and use a collection agency only as a last resort.

Of the collection techniques noted here, the first three are typical ones that are an expected part of business between long-term business partners, and the exchanges are expected to be polite and professional. However, once matters progress to attorney letters, small claims complaints, and collection agencies, the assumption is that the company will no longer be doing business with the customer, since these actions are considerably more aggressive.

Accounts Receivable Policies

The following bullet points contain suggested policies that can be of assistance in enhancing cash flows related to accounts receivable:

- **Do not allow payment terms greater than ____ days.** Do not allow the sales staff to offer terms to customers that exceed a specific number of days without prior approval by a senior manager.
- **The maximum credit offered a customer is ____.** Use a formula that best fits your industry to arrive at a reasonable maximum amount of credit to offer customers, over which a senior manager must approve the terms.
- **Stop customer credit once days outstanding exceed ____ days.** This policy is designed to keep additional credit from being extended to a customer who is not paying in a timely manner.

All three of these policies are designed to put boundaries around the amount of credit that a customer is allowed to have, thereby creating a limitation on the amount of bad debt that may be incurred, as well as the amount of accounts receivable investment that a business is willing to make.

Summary

Collection problems are typically caused by issues elsewhere in a company, such as the improper granting of credit, lost invoices, and invoicing errors. The collections staff is all too often lambasted for having trouble collecting overdue accounts receivable, when in fact the problem was caused by someone else. Thus, the recommendations noted in this section *prior to* the collections discussion should be considered of particular importance.

Inventory Enhancements

When a company maintains an inventory of the goods it plans to sell, the inventory is comprised of the raw materials needed to manufacture the goods, work-in-process for items currently going through the production process, and finished goods that are ready for sale. Each of these categories of inventory has different implications from a cash management perspective, which are:

- **Raw materials.** A company may buy more raw materials than it immediately needs, which means that extra cash is tied up in inventory for an indeterminate period of time. Since some raw materials have a limited shelf life, a possible outcome is that the initial cash expenditure may never be converted back into cash.

- **Work-in-process.** The production process is generally relatively short, but can be of considerable duration in cases where output is highly customized or complex. In these latter cases, there is a risk of customer default during production, leaving the seller with incomplete goods that may not be sellable.
- **Finished goods.** These goods are ready for sale, and so are most easily converted into cash. Some types of finished goods can become obsolete, so there is a risk that some products will be sold off at clearance prices, resulting in a reduced level of conversion back into cash.

All of the preceding issues should make it clear that converting inventory into cash can be difficult, both in terms of how much cash the company will realize and when it will receive the cash. In addition, the amount of cash involved can be spectacularly high. For example, a company manufactures refrigerators in a competitive market where it earns a gross margin of 25% on total sales of $10 million. This means that the company's cost of goods sold is $7.5 million. Its inventory turns over an average of four times per year, which means that one-quarter of its annual cost of goods sold is on the premises at any point in time. Thus, the company must invest approximately $1.9 million of cash to support its inventory requirements.

In addition to the amount of cash tied up in inventory, there are a number of holding costs associated with inventory, which can range from a few percent to 20% of the total inventory valuation. These holding costs can include:

- **Facility costs.** This is the cost of the warehouse, which includes depreciation on the building and interior racks, utilities, building insurance, and warehouse staff. There are also utility costs, such as electricity and heating fuel for the building.
- **Cost of goods.** This is the interest cost of any funds that a company borrows in order to purchase inventory.
- **Risk mitigation.** This is not only the cost of insuring inventory, but also of installing any risk-management items needed to protect the inventory, such as fire suppression systems, security monitoring, and burglar alarms.
- **Taxes.** The business district in which the inventory is stored may charge some form of property tax on the inventory.
- **Obsolescence.** A certain amount of inventory will become unusable or unsellable over time, resulting in its disposition at a reduced price or no price at all.

In short, the decision to hold inventory involves not only a substantial cash investment, but also an ongoing holding cost. In this section, we will touch upon an array of issues that can reduce the investment in inventory, which in turn may favorably impact the amount of holding costs incurred.

Product Design

The marketing department may want to blanket the market with a full range of product options, thereby increasing the odds that customers will find the exact production configuration that they want. However, this also means that the company must invest in far more finished goods inventory, so that all product configurations are in stock. For example, selling a black widget in five additional colors mandates that five times the amount of finished goods inventory be maintained. The impact on working capital can be overwhelmingly negative. Instead of designing so many products, it is more efficient from a working capital perspective to use one of the following alternatives:

- Restrict products to those most likely to sell in the highest volume. The company deliberately ignores niche products, and leaves them for other companies to sell.
- Only produce a particular combination of product options that are popular with customers. This approach is commonly used by automobile manufacturers, who prepackage certain sets of features into their vehicles.
- Store partially finished goods, and make final configurations only after customers place their orders. This interesting option results in far less inventory, but is a viable alternative only for

those companies that can ship direct to customers from central storage locations where final configurations can be made.

Another product design issue is developing products that use the same set of raw materials. By doing so, a company can restrict its raw materials inventory investment to a smaller set of items. For example, a washing machine manufacturer could require its product designers to always use the same type of screw in all of its products, so that the company only has to stock that one type of screw. The associated working capital reduction can be significant. However, this option requires a long-term commitment from the product design staff that may take an entire product cycle to yield results.

Product Record Keeping

An opportunity for inventory reduction can be found in the record keeping for products. When a product design is complete, a record of its component parts is compiled into a *bill of materials*, which is then used to order parts for the product. If the bill is incorrect, an incorrect number of parts will be ordered, which may result in an excess number of component parts being kept in stock.

Product record keeping is a particular problem when the engineering department institutes an engineering change order (ECO), in which one or more components are substituted for existing parts. If not handled properly, an ECO can result in either or both of the following problems:

- **No recordation.** The bill of materials is not updated with the ECO, so that the company continues to buy components that it is no longer using.
- **Residual stock elimination.** The ECO is implemented before the company has finished using up its stocks of the components that are to be replaced. The result is a cluster of components that will never be used.

To keep product record keeping issues from impacting cash flow, institute a cross-checking approval process for all new bills of material, have the internal auditors periodically examine the bills, and also institute a detailed procedure for ECO launches.

Inventory Acquisition

The general purchasing concepts that a company uses to acquire inventory have a profound impact on the amount of inventory that is kept on hand, and therefore on the amount of cash invested in inventory. By understanding these purchasing concepts and making alternative recommendations, the treasurer may be able to reduce the investment in inventory.

One purchasing concept is the relationship between the amount of safety stock kept on hand and the distance from which raw materials are replenished. *Safety stock* is the extra amount of inventory kept on hand to guard against shortages while a supplier is fulfilling a replacement order. For example, if a company historically uses $10,000 of a certain inventory item each week, and the supplier of that component requires one week to fulfill a replenishment order, then the company will keep $10,000 of inventory on hand while it is waiting for the replenishment order to be delivered. If a company has elected to source some inventory items with unusually distant suppliers, the company must maintain a larger safety stock to guard against shortages during the longer delivery period. The treasurer can point out the amount of cash that is being tied up in safety stock, and suggest the use of closer suppliers who can deliver on shorter notice. The net effect of this improvement requires a long time to realize, since it involves the replacement of suppliers.

Another purchasing concept is the view that businesses must guess at how many of their products will be purchased. This means that the materials management staff is "flying blind" when it creates the production schedule that drives purchases. The inevitable result will be excess quantities of some products and shortages of others. This uncertainty can be eliminated by working with larger customers to gain access to their own inventory usage information. It is usually not practical or even possible to obtain such detailed information from smaller customers, so some guesstimating will still be required for inventory planning. Nonetheless, information linkages with customers can drive a substantial reduction in inventory levels.

Inventory Ownership

There are two situations in which a company can shift the ownership of inventory to suppliers, sometimes to the extent that the company eliminates its investment in inventory. This is a clearly ideal scenario from the perspective of the treasurer. However, we have noted in the following bullet points the limited circumstances under which this technique can be applied:

- **Supplier ownership of on-site inventory.** It is possible to sole-source some inventory items with certain suppliers, who maintain inventory on the company's premises and restock it as necessary. The company only pays for these inventory items when it transfers them out of the warehouse. This practice is more common among the suppliers of fittings and fasteners. It can be expensive, since the designated suppliers have no competition, and must expend extra effort to monitor inventory levels.
- **Drop shipping.** A company may outsource all of its production to a supplier, and has the supplier ship finished goods directly to customers. The supplier only bills the company when a sale occurs, so that cash from the sale is matched against the cost of the product shipped, resulting in a net cash inflow to the company. This approach only works if a company is comfortable with having a third party manufacture what it is selling.

Manufacturing Process Flow

A manufacturing process can be designed to either "push" production jobs through it from beginning to end, or "pull" orders through the process as orders are received from customers. The first approach has a longer history. As typified by the material requirements planning system (MRP), it involves estimating likely unit quantities that will be needed for sale, and then releasing enough production orders into the manufacturing facility to generate the estimated number of units. The push system tends to focus on larger batch sizes, in the interests of lowering the per-unit cost of production. The trouble with the push system is that large production runs tend to require large amounts of in-process inventory, which increases the investment in working capital.

A better alternative is the pull system, since it is designed to produce in very small unit quantities, which reduces the amount of required inventory. Though the system initially appears to have a higher cost per unit produced, it avoids the cost of excess inventory and lowers scrap levels to such an extent that the overall cost of a pull system is lower than that of a push system.

Another cash-related benefit of a pull system is that it tends to involve the use of smaller production equipment, rather than the larger and more automated systems that are favored to manufacture the long production runs found in a push system. The result is a smaller investment in fixed assets, which improves a company's cash position.

Fulfillment

It can be extremely difficult to balance the opposing requirements of customer service and inventory management. The basic problem is that being able to fulfill 100% of all customer orders at once is nearly impossible, unless management is willing to commit to an overwhelming investment in inventory. In reality, customer orders will occasionally exceed the amount of inventory on hand, resulting in a backorder and therefore a reduction in the fulfillment percentage. A CEO who is determined to maintain a high order fulfillment rate will insist on maintaining very high inventory levels to ensure that *any* order can be fulfilled at once.

The insistence on a very high fulfillment rate has especially pernicious consequences for fashion products or anything with a short life span, since a company is more likely to be caught with excess quantities of inventory that it cannot liquidate. The result can be an ongoing series of low-price inventory liquidations.

The best solution to the fulfillment conundrum is financial analysis assistance from the treasury staff in regard to the tradeoff between each incremental percent of orders that are backordered and the corresponding change in inventory. This information can be used to give management a clear understanding of the cash investment associated with changes in the fulfillment percentage.

Either of the following suggestions may be reasonable alternatives to maintaining a high fulfillment rate:

- **Issue a $_____ credit whenever goods are backordered.** A small credit paid back to customers may retain their loyalty even if a product is backordered. The cost of these credits will probably be far lower than the investment in inventory that would otherwise be required to maintain a higher fulfillment rate.
- **Sell a similar product.** Invest in a large enough customer support team to contact every customer who has experienced a backorder, and offer them a similar product that is in stock. Again, the cost of the support staff will probably be lower than the cost of maintaining more on-hand inventory.

Inventory Disposition

If there is a part of the inventory management function that tends to be less well managed (if not ignored), it is the disposition of inventory that is not selling well. These inventory items tend to languish in storage until they are so old that the company can only obtain a pittance for them.

A vastly better approach is to have an extremely active inventory disposition program. This group constantly monitors sales trends for all products, so that it can identify situations where on-hand stocks are probably not going to be sold off within a reasonable period of time. The disposition team should have developed alternative channels through which it can sell excess inventory at somewhat reduced prices, and also has contacts among third-party inventory liquidators who will buy goods at even lower prices. The result should be a program that proactively identifies and sells off inventory at the best possible prices.

A high-grade inventory disposition program is a boon for the treasurer, since inventory turnover levels will be relatively high, ensuring that cash is extracted from the company's inventory investment as soon as possible.

Inventory Policies

The following bullet points contain suggested policies that can be of assistance in enhancing cash flows related to inventory:

- **Product designs shall incorporate an approved parts list.** Product designers are required to use a standard set of parts when creating new products, thereby reducing the number of components that must be kept in stock.
- **Bills of material shall be reviewed prior to release.** A review by a second person makes it less likely that incorrect components will be acquired for the construction of a product.
- **Suppliers shall be located no more than _____ miles from the production facility.** While not always entirely achievable, this policy is designed to shorten the time required for suppliers to deliver raw materials to the company, which in turn reduces its safety stock requirements.
- **Drop shipped inventory is the preferred stocking method.** This policy shifts inventory ownership to the company's suppliers, who ship directly to the company's customers on its behalf.
- **The customer order first-time fulfillment goal is _____%.** The fulfillment goal should be set at a level that reasonably balances the need for customer service with the lowest achievable investment in finished goods inventory.
- **Review inventory on hand exceeding _____ days of usage.** This policy serves as a trigger point for a disposition analysis, which should lead to the elimination of excess inventory while a reasonable price can still be obtained for it.

Departmental Cooperation

Reducing the working capital investment in inventory is particularly difficult, for it requires the cooperation of many departments. The product design staff must agree to use a standard parts list, the marketing manager must be convinced to forego some product versions, auditors should review bills of material, the CEO must understand the costs associated with high fulfillment rates, and so forth. Given

the impact of so many departments on inventory, the treasurer will find that the only practical way to exert any influence is through the CEO. The treasurer must convince the CEO of the impact of the various company practices on inventory, and of what needs to be changed in order to reduce the company's need for cash. This is likely to be an ongoing war with other departments, as they all present their arguments to the CEO regarding increases or decreases in the amount of inventory that the company should maintain.

Summary

If there is one area of working capital upon which to lavish attention, it is inventory. It can be extremely difficult to convert inventory into cash in the short term (if at all), so there should be a multitude of policies and controls designed to ensure that a company does everything possible to maintain a healthy rate of inventory turnover. Where possible, take a hard look at trying to outsource activities involving inventory storage to other parties, so there is no investment in inventory at all.

Accounts Payable Enhancements

From the perspective of the treasurer, a good account payable is one that has not yet been paid, since accounts payable is a source of cash. Thus, the objective is to pay as late as possible, while remaining within the payment terms negotiated with each supplier. In this section, we focus on several factors that can optimize the amount of cash made available through accounts payable.

Terms Renegotiation

Whenever the purchasing department adds a supplier, it always negotiates a variety of terms, one of which is the number of days that the company has in which to pay the supplier's invoices. The treasurer can emphasize to the purchasing manager that longer payment terms now have a higher priority. However, the purchasing negotiators will likely find that they must give way on other terms in exchange for longer payment terms, such as higher unit prices. It will be necessary to determine the cost-effectiveness of any change in terms to see if the overall package has not become excessively onerous in exchange for longer payment terms.

The impact of terms renegotiation is usually quite small over the short term. There are typically many suppliers to be contacted, and few qualified purchasing negotiators available to meet with them. Further, negotiations take time away from other activities that the purchasing staff might be engaged in, and which might also have an impact on cash flow. Also, discussions with some suppliers can be protracted, which extends the time required to meet with all suppliers. For these reasons, working capital improvement through terms renegotiation tends to be lower on the list of enhancements for many companies.

Early Payment Discounts

Some suppliers are willing to offer discounts in exchange for the early payment of invoices. The treasurer should set the minimum discount terms that the company will accept in exchange for early payment. Ideally, the minimum discount terms should be higher than the company's cost of capital. From a more practical perspective, the treasurer may prohibit all early payment discounts, no matter what the terms may be, if the company does not have enough cash to make early payments. Assuming that there is enough cash, the treasurer should be aware of the calculation for determining the effective interest rate associated with early payment terms, which is:

$$(\text{Discount \%} \div (1 - \text{Discount \%})) \times (360 \div (\text{Allowed payment days} - \text{Discount days}))$$

Converted into the format of a procedure, this calculation is:

1. Calculate the difference between the payment date for those taking the early payment discount and the date when payment is normally due, and divide it into 360 days. For example, under "2/10 net 30" terms, you would divide 20 days into 360 to arrive at 18. Use this number to annualize the interest rate calculated in the next step.

2. Subtract the discount percentage from 100% and divide the result into the discount percentage. For example, under "2/10 net 30" terms, you would divide 2% by 98% to arrive at 0.0204. This is the interest rate being offered through the credit terms.
3. Multiply the result of both calculations together to obtain the annualized interest rate. To conclude the example, multiply 18 by 0.0204 to arrive at an effective annualized interest rate of 36.72%.

EXAMPLE

The treasurer of Suture Corporation has received an early payment offer from a supplier, where Suture can take a 1% discount on any invoices paid, as long they are paid within 10 days of the invoice date. Otherwise, the company must pay the full amount after 30 days have passed from the invoice date. Using this information, the calculation of the effective interest rate of the offer is:

(1% Discount ÷ (1 – 1% Discount))
× (360 ÷ (30 Allowed payment days – 10 Discount days))
= 18.2%

As long as the cost of capital of Suture is lower than 18.2%, this is an acceptable offer that the treasurer should authorize, if there is sufficient cash available to fund the early payment.

The table below shows some of the more common early payment discount terms, explains what they mean, and also notes the effective interest rate that suppliers are offering with each one.

Credit Terms	Explanation	Effective Interest Rate
1/10 net 30	Take a 1% discount if pay in 10 days, otherwise pay in 30 days	18.2%
2/10 net 30	Take a 2% discount if pay in 10 days, otherwise pay in 30 days	36.7%
1/10 net 60	Take a 1% discount if pay in 10 days, otherwise pay in 60 days	7.3%
2/10 net 60	Take a 2% discount if pay in 10 days, otherwise pay in 60 days	14.7%

Payment Processing Frequency

In some organizations, supplier payment processing is handled in batch mode, where all payments are made on one day of the week. Since payments are relatively infrequent, there is a tendency to pay those invoices that are not quite due for payment, resulting in a faster cash outflow than is mandated by supplier payment terms. If possible, consider scheduling payments more frequently, so that the company pays suppliers exactly when invoices are due, rather than too early.

Accounts Payable Policies

The following bullet points contain suggested policies that can be of assistance in extending cash flows related to accounts payable:

- **Do not pay accounts payable early.** Adopt a monitoring system that highlights any payment made earlier than the due date required by the supplier.
- **Require purchase orders for amounts exceeding $_____.** This policy enforces an examination of larger expenditures before they are actually made.
- **Disallow purchases exceeding the department budget.** If a manager commits to a specific expenditure level for his department, do not allow expenditures above that level without approval by a senior manager. While this may seem excessively bureaucratic, it may at least push some purchases out into a later budget period.

These policies are designed to keep from disbursing cash too soon, as well as to avoid or delay some types of expenditures.

Reverse Factoring

Reverse factoring is when a finance company, such as a bank, interposes itself between a company and its suppliers and commits to pay the company's invoices to the suppliers at an accelerated rate in exchange for a discount. This approach has the following benefits:

- The company can foster very close links with its core group of suppliers, since this can be a major benefit to them in terms of accelerated cash flow.
- All of the invoice value is available for factoring, rather than the discounted amount that is available through a normal factoring arrangement.
- The company no longer has to deal with requests from suppliers for early payment, since they are already being paid as soon as possible.
- The cash flows of weaker suppliers are bolstered, so the company can benefit from price competition among multiple suppliers.
- The interest charged to suppliers should be low, since it is based on the credit standing of the paying entity, not the rating of the suppliers (which assumes that the payer has a good credit rating).

The finance company acting as the intermediary earns interest income on the factoring arrangements that it enters into with the suppliers of the target company. This can represent an excellent source of interest income over a long period of time, so bankers try to create sole-source reverse factoring arrangements to lock in this source of income.

Reverse factoring is usually begun by large companies that want to improve the cash flow situation for their suppliers. To convince a finance company to be involved in the arrangement requires the expectation of a considerable amount of factoring, which is why this approach is not available to smaller companies.

There are on-line systems available on which a company can post its approved invoices, and which suppliers can access to select which invoices they want to have paid to them earlier than dictated by the standard payment terms. These systems provide a detailed view of exactly when invoices will be paid, which is a considerable improvement over the typically opaque accounts payable system. This additional level of visibility into payments gives suppliers better knowledge of their future cash flows, which a company could use to request (and expect to receive) improved payment terms.

Researching Working Capital Enhancements

Besides the specific enhancement recommendations noted in the preceding sections, it is also possible to use several general tools for locating other potential improvements. These tools are:

- **Historical look back.** It is entirely possible that the amount of working capital used in prior years was less than it is today. If so, investigate which company policies have changed since then to increase the amount of working capital. For example, if inventory turnover has dropped from ten times per year to the current five times per year, you may be able to trace the cause to a policy decision to fulfill all customer orders within one day of receipt. This research can be invaluable for locating policies that should be reversed in order to achieve working capital reductions.
- **Subsidiary comparisons.** A particularly valuable enhancement method is to look for differences in business practices at the subsidiary level. It is entirely possible that one subsidiary is being run unusually well, and so has achieved low working capital levels. If so, consider copying its business practices over to the other subsidiaries. This approach works best when a system is in place where managers throughout the company are constantly in communication.

  Tip: A bonus plan that rewards all employees for the overall performance of a business can spur employees of different subsidiaries to work together to implement improvements.

- **Benchmarking.** Consider looking outside of the company's industry to other areas where companies have achieved extraordinary reductions in working capital. Conduct site visits to un-

derstand how they achieved these reductions, and consider whether it is possible to import the associated best-in-class practices into the company's operations.

Working Capital Forecasting

It is entirely possible that working capital cannot be driven down, because of the strategic and tactical directions in which a company is going. For example, if there are plans to sell in a different country, common business practice in that country may mandate that longer payment terms are offered to customers. To extend this example, a company may find that it is expanding faster in a country where it already sells products, and in which payment terms are longer. Thus, the treasurer needs to plan for obvious working capital changes, such as the development of new lines of business, as well as more subtle changes involving the expansion or contraction of existing businesses.

It can be extremely difficult to forecast changes in working capital, since companies do not always track working capital information by business unit, product line, or geographic region. Ideally, they should track working capital as a percentage of net sales at the most granular level possible, especially when there is a large investment in working capital. Only by doing so can the treasurer understand where cash is being used within a business, how it may change over time, and where best to concentrate improvement activities.

Working Capital Strategy

The suggestions concerning working capital have largely involved the use of specific tactical improvements to existing systems to generate incremental reductions in the amount of working capital employed. It is also possible to view the working capital situation from a broader strategy-level perspective, which can generate much larger reductions in working capital. Here are several strategy-level alternatives to consider:

- **Eliminate sales on credit.** Rather than offering sales on credit, require payment in advance. This means taking payment upon order placement, rather than upon delivery of the goods. By doing so, a company completely eliminates its investment in receivables. This approach is considered normal for some consumer goods, but would be a much harder sell for more expensive items or where it is customary for customers to withhold payment until they have approved of the delivered product.
- **Outsource production.** Take the company out of the business of manufacturing its own goods. Instead, outsource all production to a contract manufacturer, and have the manufacturer ship goods directly to customers (known as drop shipping). Depending upon the arrangement, this can mean that the manufacturer takes on the working capital burden associated with raw materials and finished goods. However, doing so means that the company is exporting its product designs to a business that could become a competitor.
- **Minimize the number of suppliers.** If management is willing to sole source many of its raw materials, it may become such a large customer to the few remaining suppliers that they will be more willing to accept longer payment terms. This is only a valid option if the loss of the company's business would be a notable blow to a supplier.

The net effect of these strategic-level moves could even be a situation where a company has no working capital at all, or even negative working capital. The options noted here will only work under certain circumstances, but are worth consideration, given how large an impact they can have on the cash position of a company.

Chapter Summary

The treasurer does not have a direct role in the management of those areas that use working capital, with the sole exception of the credit department. This means that the treasurer is reduced to an advisory role. In that role, it is useful to engage in various analyses to show how policy and procedure changes can impact

the company's use of cash. It is then necessary to continually communicate these results to the managers of other departments, and do whatever is necessary to convince them of the need to make proposed changes. Further, the analysis team must continue to monitor cash usage and create a feedback loop with the other managers, so that they know how their departments are impacting cash flow. These activities by the treasury staff position it as a sort of in-house consulting department, with plenty of analysis skills but little authority to make changes. Given this unique role, it is of considerable importance for the treasurer to do everything possible to convince the CEO of the need for active working capital management. Since the CEO has absolute authority to make changes, this person is the only one who can enforce what the treasurer wants.

Another way to look at the working capital area is through an analysis of a company's cash conversion cycle, which is the time period from when cash is expended for the production of goods, until cash is received from customers in payment of those goods. We delve into the concept of the cash conversion cycle in the Cash Management Metrics chapter.

Review Questions

1. Working capital is primarily comprised of:
    A. Accounts receivable, fixed assets, and long-term debt
    B. Goodwill, inventory, and long-term debt
    C. Accounts receivable, inventory, and accounts payable
    D. Treasury stock, retained earnings, and common stock

2. Cash flow can be accelerated in the billing area by:
    A. Preparing invoices in batches
    B. Issuing larger invoices less frequently
    C. Ensuring that all invoices are mailed to customers
    D. Proofreading complex invoices

3. The use of an engineering change order can impact working capital because:
    A. It results in longer intervals before customers pay for sales on credit
    B. The cost of capital increases
    C. The company must now pay for additional components
    D. Replaced components may still be in stock and so are never used

4. Drop shipping:
    A. Is an aggressive form of product testing
    B. Is when a supplier ships goods directly to a company's customers
    C. Is when suppliers ship goods directly to a company's production line
    D. Requires no receiving inspection

5. An early payment discount should be accepted:
    A. Only when the related interest rate is higher than the company's cost of capital
    B. At all times
    C. Never when the discount is 1% or less
    D. Never when the net payment days are less than 30

Review Answers

1. A. Incorrect. Working capital does not contain fixed assets or long-term debt
   B. Incorrect. Working capital does not contain goodwill or long-term debt
   C. **Correct.** Working capital contains accounts receivable, inventory, and accounts payable
   D. Incorrect. Working capital does not contain any types of equity

2. A. Incorrect. Delaying invoice processes until there is a batch to prepare slows down collections.
   B. Incorrect. Issuing large invoices less frequently will undoubtedly decelerate cash flows.
   C. Incorrect. Mailing invoices is one of the slowest transmission methods.
   D. **Correct.** Proofreading complex invoices makes it less likely that invoice payments will be held up due to errors.

3. A. Incorrect. An ECO should not impact the time customers take in which to pay.
   B. Incorrect. There is no direct relationship between the cost of capital and an ECO.
   C. Incorrect. The company should no longer have to pay for any components being replaced.
   D. **Correct.** A rushed change order can result in some replaced components remaining in stock and never being used.

4. A. Incorrect. Drop shipping does not involve dropping items during shipping.
   B. **Correct.** Drop shipping is when a supplier ships goods directly to a company's customers.
   C. Incorrect. Just-in-time practices include delivering supplies directly to a company's production line.
   D. Incorrect. Just-in-time practices avoid the inspection of incoming goods.

5. A. **Correct.** An early payment discount should be accepted when the related interest rate is higher than the company's cost of capital.
   B. Incorrect. Some discounts will be less than the corporate cost of capital.
   C. Incorrect. Some smaller discounts may be cost-effective.
   D. Incorrect. Some shorter payment days result in the highest effective interest rate.

Chapter 9
Investment Alternatives

Learning Objectives

- Recognize how a one-to-many cash sweep can cause trouble
- Identify the effect of an inverted yield curve on interest rates
- Determine why commercial paper has a short maturity
- Ascertain the purpose of a secondary market

Introduction

Any company will have occasional surges in cash flow, while wealthier ones may have substantial cash reserves. The treasurer should have a system in place for investing this cash, as defined by a number of restrictions that are primarily designed to protect the cash and make it readily accessible. In this chapter, we discuss the guidelines used for investing, various investment strategies, and the investment instruments most commonly used. The chapter also addresses various analysis, accounting, and procedural issues related to investments.

Investment Guidelines

Though this chapter is entirely concerned with investments, we must emphasize that cash management is primarily about keeping cash reserves available for operational use; it is not about maximizing return on investment. The following guidelines are designed to meet this cash availability goal:

- **Protect the cash.** Above all, do not lose the cash. No investment should be so risky that the company is unable to recover the cash that it initially placed in the investment. This is a particularly important consideration in situations where a company has a short-term operational need for the cash, and is only parking it in an investment for a short time in order to gain some assured income.
- **Ready conversion to cash.** It should be easy to convert an investment into cash on little notice. The treasurer must be able to satisfy any short-term operational need for cash, even if it was not planned for in the cash forecast. This means that there should be an active secondary market for all investments, where someone else can readily be found to acquire an investment instrument held by the company.
- **Earn a return.** After the preceding two factors have been dealt with, the treasurer may optimize the return on investment. This means that, if there are two possible investments that have identical risk profiles and liquidity, the treasurer may then pick the one having the greater return on investment.

The interplay between these guidelines changes in relation to the duration of an investment. For example, a portfolio of investments that all have long-term maturities usually have returns associated with them that are locked in (assuming they are held to maturity), so there is a reduced risk related to the return that will be earned. Conversely, and depending upon the existence of a secondary market, it may be more difficult to liquidate these longer-term investments. For comparison purposes, a short-term investment is at considerable risk of a change in the rate of return, for the company is constantly buying new investments, each reflecting the most recent market rate of return; however, the shorter associated maturity makes it easier to liquidate these investments to meet short-term cash needs.

We must make it clear that the treasurer should be exceedingly risk averse when investing company cash. All but the largest and wealthiest corporations will be harmed by an investment loss, so do not even attempt to gain outsized returns on an investment when the accompanying risk level is too high.

Tip: There should be a formal investment policy that confines the treasury department to a narrow range of possible investments that are considered to be at low risk of default. A sample policy is listed later in this section.

There are several steps that can be taken to reduce the risk of losing invested funds, and which the treasury staff should keep in mind when engaging in investment activities. They are:

- **Diversification.** Only invest a limited amount of cash in the securities of a single entity, in case that entity defaults on its obligations. Similarly, only invest a limited amount in securities originating within one industry, in case economic circumstances lead to multiple defaults within the industry.
- **FDIC insurance.** The Federal Deposit Insurance Corporation (FDIC) protects depositors of insured banks against the loss of their deposits and accrued interest if an insured bank fails. This coverage includes deposits in checking accounts, savings accounts, money market deposit accounts, and certificates of deposit. The coverage does not include cash invested in stocks, bonds, mutual funds, life insurance proceeds, annuities, or municipal securities. The amount of this coverage is limited to $250,000 per depositor, per insured bank. Consequently, it may be worthwhile to monitor account balance levels and shift funds above the insurance cap to accounts in other banks. By doing so, a company can achieve an FDIC coverage level that is substantially higher than $250,000.
- **Sweep structure.** When a company elects to have cash automatically swept out of an account and into an interest-earning investment, it should insist on a *one-to-one sweep*, where its cash is used to acquire a specific investment instrument. If the bank handling the transaction were to enter bankruptcy, the company would have title to the acquired investment. A worse alternative is to engage in a *one-to-many sweep*, where the funds of multiple businesses are used to acquire an investment instrument. In this case, the bank handling the transaction has title to the investment instrument, which means that the company would be reduced to filing a creditor claim that may eventually result in compensation for an amount less than its original investment.

All three of these risk reduction steps are to guard against admittedly unusual circumstances that a business may never experience. Nonetheless, if a counterparty were to fail, the potential loss could be quite large. Consequently, give strong consideration to these options when engaging in investment activities.

To ensure that investment guidelines are followed, they should be codified in a formal investment policy that is approved by the board of directors. The internal audit department should monitor compliance with this policy. A sample policy follows.

EXAMPLE

Suture Corporation's board of directors adopts the following investment policy.

General

In general, investments in securities with low liquidity levels shall be restricted to 15% of the company's total investment portfolio. There must be an active secondary market for all other investments.

Debt Investments

Debt investments are subject to the following restrictions:

- May only be made in high-quality intermediate or long-term corporate and Treasury bonds
- No more than 20% of the total debt investment can be made in a single industry
- Investments cannot comprise more than 5% of the debt issuances of the investee

- The average term to maturity cannot exceed _____ years
- An investment must be terminated within one month if its Standard & Poor's credit rating drops below BBB
- Any bank acting as a counterparty shall have a capital account of at least $5 billion
- Short-term investments shall be pre-qualified by the investment advisory committee for the placement of funds

Equity Investments
Equity investments are subject to the following restrictions:

- May only be made in the common stock of companies trading on the New York Stock Exchange
- No more than 20% of the total equity investment can be made in a single industry
- Investments cannot comprise more than 5% of the capitalization of the investee

Control of Securities
All securities over which the company has physical control shall be consigned to an accredited third party.

Prohibitions
The company is prohibited from investing in any of the following types of investments without the prior approval of the board of directors:

- Commodities
- Foreign equity investments and commercial paper
- Leveraged transactions
- Real estate
- Securities with junk ratings
- Short sales or purchases on margin
- Venture capital

It is useful to periodically compare the company's investment policy to the actual structure and performance of its investment portfolio over the past few months, for the following reasons:

- **Compliance.** To ensure that the treasury staff has following the guidelines set forth in the policy.
- **Performance.** To see if the company might have achieved better returns if the policy had been somewhat less restrictive.
- **Risk management.** To determine whether the company avoided or mitigated risks by adhering to the policy.
- **Liquidity.** To see if adherence to the policy allowed the company to routinely meet its liquidity requirements.

This analysis should be conducted by someone not reporting to the treasurer, in order to avoid any bias in the results.

Investment Strategy

Within the preceding guidelines, what strategy should a treasury department follow when investing cash? Several possibilities are noted in the following bullet points. When considering the options, please note that the more active ones require accurate cash forecasts, which may not be available.

- **Earnings credit.** The simplest investment option of all is to do nothing. Cash balances are left in the various bank accounts, where they accrue an earnings credit that is offset against the fees charged by the bank for use of the accounts. If cash balances are low, this can be an entirely acceptable strategy, since more active management of a small amount of cash will probably not glean a significantly larger return. However, the earnings credit can only be applied to fees charged in the current period; if the fees are less than the credit, the company loses the difference. This consideration puts a cap on the amount of funds that should be left in a bank account.

EXAMPLE

Suture Corporation has an African division that is in startup mode, and so has little excess cash. Currently, the division maintains an average of only $20,000 in its sole bank account. Its bank offers a 1.5% earnings credit on retained cash balances, which is $25 per month that can be offset against account fees. The best alternative is a money market fund that earns 2%, but which requires the manual transfer of funds several times per month.

Given the minor amount of the balance and the low return on other investment alternatives, the treasurer elects to accept an earnings credit, rather than taking any more aggressive investment actions.

- **Automated sweeps.** Sweep all excess cash into a central account, and shift the funds in that account to an overnight investment account. This strategy requires no staff time, but yields a low return on investment, since banks charge significant fees to manage this process.
- **Laddering.** The laddering strategy involves making investments of staggered duration, so that the company can take advantage of the higher interest rates typically associated with somewhat longer-term investments. For example, a treasury department can reasonably forecast three months into the future, so it invests in a rolling set of investments that mature in three months. To begin this strategy, it invests a block of funds in an investment having a one-month maturity, another block in an investment with a two-month maturity, and yet another block in an investment with a three-month maturity. As each of the shorter investments matures, they are rolled into new investments having three-month maturities. The result is an ongoing series of investments where a portion of the cash is made available for operational use at one-month intervals, while taking advantage of the higher yields on three-month investments.
- **Match maturities.** An option requiring manual tracking is to match the maturities of investments to when the cash will be needed for operational purposes. This method calls for a highly accurate cash forecast, both in terms of the amounts and timing of cash flows. To be safe, maturities can be planned for several days prior to a forecasted cash need, though this reduces the return on investment.
- **Tiered investments.** If a business has more cash than it needs for ongoing operational requirements, the treasury staff can conduct an analysis to determine how much cash is never or rarely required for operations, and use this cash in a more aggressive investment strategy. For example:
  - ***Continual cash usage.*** Cash usage levels routinely flow within a certain range, so there must be sufficient cash available to always meet these cash requirements. The investment strategy for the amount included in this investment tier should be concentrated in highly liquid investments that can be readily accessed, with less attention to achieving a high rate of return.
  - ***Occasional cash usage.*** In addition to cash usage for daily operating events, there are usually a small number of higher cash usage events that can be readily predicted, such as a periodic income tax or dividend payment. The strategy for this investment tier should focus on maturity dates just prior to the scheduled usage of cash, along with a somewhat greater emphasis on the return on investment. There should be a secondary market for these types of investments.
  - ***No planned cash usage.*** If cash usage levels have never exceeded a certain amount, all cash above this maximum usage level can be invested in longer-term instruments that have higher returns on investment, and perhaps with more limited secondary markets.

EXAMPLE

The treasurer of Suture Corporation wants to adopt a tiered investment strategy. He finds that the company routinely requires a maximum of $200,000 of cash for various expenditures on a weekly basis. In addition, there are scheduled quarterly dividend payments of $50,000 per quarter, and quarterly income tax payments of $100,000, which fall on the same date. There have not been any instances in the past

three years where cash requirements exceeded these amounts. Currently, Suture maintains cash reserves of $850,000 on a weekly basis. Based on the preceding information, the company could invest the cash in the following ways:

Investment Tier	Amount	Investment Type
Continual cash usage	$200,000	Money market
Occasional cash usage	150,000	Certificates of deposit, commercial paper
No planned cash usage	500,000	Bonds
Total	$850,000	

The tiered investment strategy requires close attention to the cash forecast, particularly in regard to the timing and amount of the occasional cash usage items. Otherwise, there is a risk of being caught with too much cash in an illiquid investment when there is an immediate need for the cash.

- **Ride the yield curve.** An active treasury staff can buy investments that have higher interest rates and longer maturity dates, and then sell these investments when the cash is needed for operational purposes. Thus, a company is deliberately buying investments that it knows it cannot hold until their maturity dates. If the yield curve is inverted (that is, interest rates are lower on longer-maturity investments), you would instead continually reinvest in very short-term instruments, no matter how far in the future the cash is actually needed again by the company.

EXAMPLE

The treasurer of Suture Corporation has $300,000 available to invest for the next 90 days. He notes that the interest rate on 3-month T-Bills is 2.0%, while the rate on 6-month T-Bills is 2.25%. He elects to take advantage of this 0.25% difference in interest rates by investing the $300,000 in 6-month-T-Bills, and then selling them on a secondary market in 90 days, when he needs the cash for operational purposes.

The following investment strategies require considerable investing expertise and the incurrence of more risk, in exchange for the possibility of higher investment returns. These strategies should not be followed unless the treasury staff has considerable specialized expertise in the indicated areas, and spends enough time modeling probable outcomes to understand the risks being undertaken. The strategies are:

- **Credit rating anticipation.** If the treasurer expects that the credit rating of a debt issuer is about to be revised upward, it may make sense to acquire those debt securities to which the rating change would apply. If anticipated correctly, this means that the company buys securities at a reduced price and later sells them at the higher price associated with the higher credit rating. This is a difficult game to play, since it is not easy to anticipate a credit upgrade, much less the timing of the upgrade. Also, an investment in the securities of a low-grade entity is at greater risk of suffering from a default, where the company loses its entire investment. Credit rating anticipation also requires a considerable amount of analysis time, which is usually not available in smaller treasury departments.
- **Leveraged investing.** A larger organization may be able to issue debt at quite a low interest rate, and then invest the borrowed funds in higher-yielding investments, resulting in an incremental financing gain to the business. This behavior is not recommended, since it diverts attention from the management of operations. It is particularly risky when the maturities of the company's investments are shorter than those of its borrowings, since the return on investment may suddenly decline below the cost of its borrowings, resulting in losses.

A variation on all of the preceding strategies is to outsource the investment task to an experienced third party money manager. This option works well if a company is too small or has too few cash reserves to actively manage its own cash. If outsourcing is chosen, be sure to set up guidelines with the money manager for exactly how cash is to be invested, primarily through the use of lower-risk investments that

mitigate the possibility of losing cash. A variation on the outsourcing concept is to invest primarily in money market funds, which are professionally managed.

Repurchase Agreements

A repurchase agreement is a package of securities that an investor buys from a financial institution, under an agreement that the institution will buy it back at a specific price on a certain date, typically the next business day. The repurchase price incorporates the interest rate paid to the investor during the investor's holding period. It is most commonly used for the overnight investment of excess cash from a company's cash concentration account, which can be automatically handled by a company's primary bank.

The interest rate earned on this investment is equal to or less than the money market rate, since the financial institution takes a transaction fee that reduces the rate earned. Despite the low return, the automated nature of repurchase agreements makes them a popular investment choice for treasurers who might otherwise not want to spend the time manually entering into a short-term investment for residual funds.

Time Deposits

A time deposit is a bank deposit that pays a fixed interest rate, and requires an investment for a specific period of time, usually anywhere from one week to one year. This is essentially a loan from the company to a bank, with interest set at a level close to the interbank rate. Time deposits have the advantage of being set at fixed interest rates, so there is no risk of an interest rate decline. However, the interest rate is typically quite low.

Certificates of Deposit

A certificate of deposit (CD) is an interest-bearing certificate that is issued by a bank as a receipt for deposits invested with it. A CD can have a maturity of as little as a few weeks to several years. There is a secondary market for some CDs, so this type of investment can be liquidated relatively quickly. CDs are available in multiple currencies. In particular, two variations on the concept are:

- **Eurodollar CDs.** Denominated in U.S. dollars, and issued by entities outside the United States.
- **Yankee CDs.** Denominated in U.S. dollars, and issued by foreign entities with operations in the United States.

A CD is issued at its face value, with additional interest due to the investor in addition to the face amount. A shorter-term CD is usually issued at a fixed interest rate, with interest being paid at the end of each year or the maturity of the instrument.

A longer-term CD may instead use a floating interest rate that is based on a major benchmark interest rate, such as LIBOR. If so, the interest rate is usually reset every three or six months.

Bankers' Acceptances

A banker's acceptance arises when a bank guarantees (or accepts) corporate debt, usually when it issues a loan to a corporate customer, and then sells the debt to investors. These acceptances are sold at a discount, and redeemed upon maturity at their face value. Because of the bank guarantee, a banker's acceptance is viewed as an obligation of the bank. If the bank has a good reputation, the acceptance can be resold in an open market, at a discount to its face value. A banker's acceptance is considered to be a very safe asset, and is used extensively in international trade. A banker's acceptance usually has a term of less than 180 days.

Commercial Paper

Commercial paper is a promissory note issued by a corporation, usually with a maturity of less than 180 days; thus, it is a short-term bond. The short maturity is designed to avoid the extra cost of registration

with the Securities and Exchange Commission that would be required if the term were to exceed 270 days. Typical issuers of commercial paper include:

- Financial entities
- Industrial companies
- Insurance companies
- Public utilities

Entities issuing commercial paper have usually obtained a credit rating from one of the major credit rating agencies, such as Standard & Poor's, Moody's Investors Service, or Fitch Ratings. If the credit rating of an issuer were to decline, then the value of its commercial paper would decline as well (and vice versa), which can impact the value of investments if they are to be sold on a secondary market.

Commercial paper is usually sold at a discount from its face value, which means that the investor buys it at a discounted price, and is repaid on the maturity date at its face value. Most commercial paper is unsecured, which means that this type of investment carries a higher interest rate to reflect the increased level of risk associated with it—though the rate is still quite low. Commercial paper can be acquired directly from the issuing companies, but is also commonly available through banks that act as dealers.

Money Market Funds

A money market fund is a pool of short-term financial instruments operated by a fund manager, for which investors can purchase shares. A money market fund usually invests solely in federal government debt issuances, such as T-Bills and T-Notes. It is quite easy to invest in and move cash out of a money market fund, and so is ideal for extremely short-term investments. To attract investors, many of these funds offer late cutoff times for new investments, which allow the treasury staff to wait until later in the day to concentrate cash positions before making an investment in a fund.

There are some discernible differences in the risk associated with different money market funds, which is caused by some fund managers taking risks in order to outperform the market. Conversely, other fund managers do an excellent job of investment diversification in order to reduce risk. Some funds may also be able to defer redemptions under certain conditions. For these reasons, be sure to examine the stated objectives and rules of a fund before investing in it.

U.S. Government Debt Instruments

Despite the continuing increases in the debt of the United States government, its debt instruments are still considered among the lowest-risk in the world. The ones most commonly used by corporations for investment are Treasury Bills (T-Bills) and Treasury Notes (T-Notes). T-Bills have 3, 6, and 12-month maturities. T-Bills having maturities of 3 and 6 months are auctioned on a weekly basis, while T-Bills with 12-month maturities are auctioned once a month. T-Bills are sold at a discount, and redeemed upon maturity at their face value. There is a very active secondary market in T-Bills, so it is easy to sell them prior to their maturity dates.

The maturities of T-Notes range from 1 to 10 years. Two-year T-Notes are issued on a monthly basis, while T-Notes with other maturities are issued on a quarterly basis. T-Notes are available as both inflation-indexed and fixed-rate investments. Interest on T-Notes is paid semi-annually. T-Notes are traded on secondary markets at premiums or discounts to their face values, to reflect the current market interest rate (see the Effective Interest Rate section).

Treasury Bonds are also available. Bonds have similar characteristics to T-Notes, but have longer maturities. Maturities are generally in the range of 10 to 30 years.

Paradoxically, the trouble with U.S. government debt instruments is their safety—the United States government can obtain the lowest possible interest rates, so there is little return on funds invested in these instruments.

State and Local Government Debt

An interesting investment option is the debt obligations issued by state and local governments. These debt instruments are usually issued in conjunction with the revenue streams associated with large capital projects, such as airport fees and tolls from toll roads. Other instruments are based on general tax revenues. The maturities of these obligations are typically multi-year, so a company in need of cash must rely upon a vigorous aftermarket to liquidate them prior to their maturity dates. The returns on state and local debt obligations are higher than the yields on federal government issuances, and income from these investments is usually exempt from federal taxation.

Though it is rare for a state or local government to default on its debt, such cases are not unknown, so be mindful of the reliability of the cash flows supporting debt repayment.

Bonds

A bond is an obligation to pay a fixed amount to the bond holder, usually in the amount of $1,000 per bond, as of one or more dates specified in a bond agreement. The maturities of bonds can be extremely long, sometimes extending to 30 or even 40 years in the future.

There are many variations on the bond concept, but the two key types are based on differing methods for paying the bond holder. They are:

- **Coupon bond.** Each bond comes with a set of coupons, which are submitted to the issuer for payment of interest at regular intervals. The company does not track bond holder contact information for coupon bonds.
- **Registered bond.** The issuer maintains an updated list of the holders of its bonds, and sends interest payments to them at regular intervals.

The coupon bond is designed to be more easily transferrable between bond holders. This is of some importance, since there is an active secondary market in many bonds. The presence of a secondary market is critical for investors, especially when the maturity date is many years in the future, and the holder is uncertain of how long it wants to retain possession of the bond.

Several variations on bonds are noted below:

- **Secured/unsecured.** Some bond instruments provide specific collateral against which bondholders have a claim if the bonds are not paid. If the treasury staff is working under a guideline to protect cash, then it should only invest in secured bonds.
- **Convertible.** This is a bond that can be converted to stock using a pre-determined conversion ratio. This option is usually only available at set intervals, and conversion is at the discretion of the bondholder. The presence of conversion rights typically reduces the interest rate on a bond, since investors assign some value to the conversion privilege. If the treasury staff is primarily interested in obtaining a high return on investment, it should avoid convertible bonds, since they tend to have somewhat lower returns.
- **Callable.** This is a bond that the issuer can buy back prior to its maturity, usually because there has been a decline in interest rates since the issuance of the bond, and the issuer wants to refinance at a lower rate. The existence of a call provision tends to reduce the value of a bond, so treasury departments usually avoid this type of bond.

The Primary and Secondary Markets

A primary market refers to the original sale of a security to an investor. Whenever a security is sold thereafter among investors and market makers, it is referred to as the secondary market. The existence of a secondary market is critical to the investment operations of a treasury department, since it allows for the liquidation of an investment prior to its maturity date. If there were no secondary market, the treasury staff would have to limit its investment activities to the most short-term investments, in order to ensure the availability of cash.

The secondary market is comprised of financial institutions and dealers. These entities can act as brokers, taking a commission on the transfer of an investment from a seller to a buyer. Alternatively, they can hold an inventory of investments on their own behalf, and sell them directly to buyers for a profit.

Secondary markets are particularly important when a company is aggressively investing in longer-term investments that generate higher interest rates. This activity, known as "riding the yield curve," is only possible if a business can promptly liquidate an investment well before its maturity date.

The Discounted Investment Formula

Some investments, such as T-Bills and T-Notes, are sold at a discount and redeemed at their face value. The calculation used to determine the correct discount to pay for one of these instruments is:

$$\text{Face value} \times \text{Discount rate} \times \frac{\text{Day count}}{\text{Annual basis}} = \text{Amount of discount}$$

For example, a company wants to buy a 90-day $10,000,000 T-Bill at a discount of 2.5%. The calculation is:

$$\underset{\text{Face value}}{\$10{,}000{,}000} \times \underset{\text{Discount rate}}{0.025} \times \frac{\text{90 Days}}{\text{360 Days}} = \underset{\text{Discount}}{\$62{,}500}$$

When the discount is subtracted from the face value of the T-Bill, the amount to be paid is:

$10,000,000 Face value - $62,500 Discount = $9,937,500 Purchase price

Accounting for Investments – Classifications

When an investor acquires a security, it must classify the investment into one of the following three categories:

Investment Classification

Investment Classification	Description	Applies To
Trading securities	This is a security acquired with the intent of selling it in the short-term for a profit.	Debt or equity securities
Held-to-maturity securities	This is a debt security acquired with the intent of holding it to maturity, and where the holder has the ability to do so. This determination should be based not only on intent, but also on a history of being able to do so. Do not classify convertible securities as held-to-maturity.	Debt securities
Available-for-sale securities	This is an investment in a security that is not classified as a trading security or a held-to-maturity security. It is not held strictly for short-term profits, not is it expected to be held to maturity (in the case of debt securities). Thus, it is an "everything else" classification for securities that cannot be assigned the "trading" or "held-to-maturity" classifications.	Debt or equity securities

Additional points regarding these three investment classifications are as follows:

Trading Securities

- **Current asset status.** Since trading securities are expected to be sold in the near term, they are always classified in the balance sheet as current assets. If a security were to be classified as a long-term asset, this would imply that the asset is not a trading security.
- **Fair value requirement.** These securities must have readily determinable fair values. This requirement tends to limit the applicable securities to those registered for trading on an exchange or in the over-the-counter market. If an investment is in a mutual fund, fair value can be derived from the published fair value of the fund. Securities issued by privately-held entities can be quite difficult to value, and so cannot be considered trading securities, even if the intent of management is to sell them in the short-term for a profit. Fair value is especially difficult to obtain when there are restrictions on the stock of an investee, since the restrictions limit the ability of the investor to sell the shares.
- **Market price not available.** If no market price can be obtained for debt securities, it is allowable to instead use the present value of future cash flows related to the securities, as well as other valuation methods.
- **Trading intent.** The intent of management should be to sell these securities in the short-term for a profit, which can be defined as within the next three months. This short-term focus applies well to the activities of a treasury department that is continually seeking to invest a company's excess cash flows in low-risk investments, with the intent of selling the investments and returning the cash to the company to meet projected cash needs.

Held-to-Maturity Securities

- **Debt only.** As the title of this security implies, held-to-maturity securities must have maturity dates. Since equity securities do not have maturity dates, they cannot be classified as such.
- **Convertible securities.** A convertible debt security cannot be classified as held-to-maturity, since it is possible that the investor will be tempted to convert the security into the equity of the borrower, if the conversion feature is profitable. Also, the interest rate paid on such a security is generally lower than usual, because of the valuable conversion feature. It is too much to expect an investor to continue holding the security to maturity while earning an unusually low rate of return.
- **Collateral status.** A security can be classified as held-to-maturity, even if it is held by a third party as collateral on a loan, as long as the investor expects to repay the underlying borrowing, and so can recover the security.
- **Intent of the holder.** Use of this classification depends heavily on the intentions of the holder. If there is a reasonable chance that the investor will sell off a debt security as part of its asset management activities, there is no real intent to hold to maturity, and so some other designation must be used. For example, do not use this classification if management is willing to sell a debt security under any of the following circumstances:
    - There are changes in market interest rates
    - There are changes in the prepayment risk associated with a debt security
    - The investor will have a need for liquidity
    - There are changes in the availability of alternative investments
    - There are changes in the available yield on alternative investments
    - There are changes in the sources of available funding, and the terms being offered
    - There are changes in the risk associated with foreign currency holdings
    - In response to a tax planning strategy
    - The need to meet regulatory capital requirements

EXAMPLE

The treasurer of Nefarious Industries has a considerable amount of excess funds available that spin off from the company's (admittedly) nefarious industries. The ownership of the organization is partially comprised of the sons and daughters of the founding family, who want frequent and large dividend distributions. To meet this requirement, the treasurer is constantly looking for higher-yielding debt instruments, and is willing to shift investments to obtain these higher yields. Since the intent is not necessarily to hold these securities to maturity, the investments must be accounted for under some other designation than held-to-maturity. The most likely alternative classification is the available-for-sale designation.

- **Reclassification policy.** If the investor has a policy of automatically shifting the classification of all held-to-maturity securities to a different classification on a certain date prior to maturity, this implies that the investor never intended to hold any securities to maturity. If so, the held-to-maturity classification should never be used.
- **Borrower deterioration.** It is acceptable to sell a held-to-maturity investment prior to its maturity date if there is an actual deterioration of the creditworthiness of the borrower. However, if the sale occurs prior to the actual deterioration of the creditworthiness of the borrower, this calls into question the intent of the investor to hold its other debt securities through to their maturity dates.

Tip: Document the reason(s) for the perceived deterioration in the creditworthiness of a borrower, which may be needed to prove the investor's case to the auditors for why it was justified in selling the related security, and should still use the held-to-maturity designation for other investments.

- **Substantial recovery.** The main intent behind having a held-to-maturity classification is that the investor will recover its entire investment on the maturity date, irrespective of interest rate fluctuations in the meantime. If the terms of the debt agreement make this recovery unlikely, use a different investment classification.
- **Sale prior to maturity date.** It is possible for an investor to sell a held-to-maturity security prior to its maturity date, without interfering with the designation. This can occur in either of the following situations:
  - The sale is so close to the maturity date that the interest rate risk is essentially eliminated as a factor in the determination of the price of the security; or
  - The sale occurs after the investor has already collected at least 85% of the outstanding principal.
- **Unforeseen circumstances.** If circumstances arise that are of an unusual and nonrecurring nature, which force a business to sell off its debt securities prior to their maturity dates, doing so does not call into question the intent of the investor's future ability to hold debt securities to maturity. These circumstances must be unusual for the investor, and could not have been reasonably anticipated. Situations in which these criteria are met should be rare. The following are all situations that can be considered unforeseen circumstances:
  - A change in the tax law that alters the tax-exempt status of the interest associated with a debt security
  - A business combination or spin-off that requires the investor to alter its held-to-maturity holdings to maintain its credit risk policy or interest rate risk position (but not if the asset liquidation is intended to fund an acquisition)
  - An increase in a regulator's capital requirements that force the investor to sell its held-to-maturity securities
  - A change in statutory requirements in regard to the permitted size of certain types of investments
- **Taint.** If the actions of an investor indicate that there is a material contradiction between its stated intent to hold debt securities to their maturity dates and actual holding activity, all of its securities designated as held-to-maturity must be reclassified as available-for-sale securities. The net effect

of this change is that holding gains and losses in each subsequent reporting period must be reported as unrealized gains and losses in other comprehensive income.

The general thrust of these additional points for held-to-maturity securities is that the accounting standards are designed to make it quite difficult to use this classification. In most cases, an investor will find that it only uses the trading and available-for-sale classifications for its investments.

Available-for-Sale Securities

- **Current asset status.** Being an "in between" classification, it is entirely possible that available-for-sale securities will be classified within either current assets or long-term assets on the balance sheet. If the intent is to hold them for less than one year, they should be classified as current assets.

Accounting for Investments – Realized and Unrealized Gains or Losses

An important concept in the accounting for investments is whether a gain or loss has been realized. A realized gain is achieved by the sale of an investment, as is a realized loss. Conversely, an unrealized gain or loss is associated with a change in the fair value of an investment that is still owned by the investor.

EXAMPLE

Rapunzel Hair Products owns 500 shares of Tsunami Products common stock. The cost basis of these shares is $10,000, or $20 per share. At the end of the current period, the fair value of the shares has risen by $3, to $23. This translates to a gain of $1,500. Since Rapunzel continues to hold the shares, the gain is unrealized. In the following period, the fair value of the common stock is unchanged. Rapunzel sells the shares, resulting in a realized gain of $1,500.

There are other circumstances than the outright sale of an investment that are considered realized losses. When this happens, a realized loss is recognized in the income statement and the carrying amount of the investment is written down by a corresponding amount. For example, when there is a permanent loss on a held security, the entire amount of the loss is considered a realized loss, and is written off. A permanent loss is typically related to the bankruptcy or liquidity problems of an investee.

An unrealized gain or loss is not subject to immediate taxation. This gain or loss is only recognized for tax purposes when it is realized through the sale of the underlying security. This means that there may be a difference between the tax basis of securities and their carrying amount in the accounting records of the investor, which is considered a temporary difference.

NOTE: When a loss is recognized due to a permanent loss on a security that has not yet been sold, this loss is not yet subject to taxation, and will not be taxable until the security is sold.

Accounting for Investments – Purchases and Sales

There are a number of issues that an investor needs to understand that relate to the purchase or sale of investments. In this section, we examine the details of how to calculate a gain or loss on the sale of an investment, how to account for noncash acquisitions of securities, lump-sum purchases, and other topics related to the purchase and sale of investments.

The Gain or Loss Calculation

At the most basic level, an investor buys an investment and later sells it, hopefully earning a profit from these transactions. What is the accounting for the purchase and sale of an investment? The key points are:

- When buying an investment, the initial cost of the investment is considered to be the purchase price, *plus* any brokerage fees, service fees, and taxes paid.

- When selling an investment, the net proceeds are considered to be the selling price, *minus* any brokerage fees, service fees, and transfer taxes paid.

The difference between these two figures is the realized gain or loss on sale of an investment.

EXAMPLE

Quest Adventure Gear buys 1,000 shares of the common stock of Sharper Designs, at a price of $18.50 per share. Quest also incurs a $75 brokerage fee. Thus, the total cost of the investment is $18,575. The calculation is:

(1,000 Shares × $18.50/share) + $75 Brokerage fee

One year later, Quest sells all 1,000 shares for $19.25, while also incurring another $75 brokerage fee and also paying $150 in transfer taxes. Thus, the total proceeds from the sale are $19,025. The calculation is:

(1,000 Shares × $19.25/share) - $75 Brokerage fee - $150 Transfer taxes

Quest's capital gain on this investment transaction is $450, which is calculated as the net proceeds of $19,025, minus the adjusted cost basis of $18,575.

Noncash Acquisition of Securities

In some instances, a security may be acquired through some form of noncash consideration, such as trading land for a group of securities. In this situation, the acquired securities are to be recognized at the fair value of either the consideration paid or received, whichever is more clearly evident.

Tip: Store all evidence of fair value used to determine a noncash acquisition of securities, as proof for the auditors. For example, if an appraiser was used, store a copy of the appraisal report with the journal entry documenting the acquisition of securities.

Assignment of Costs to Securities

What if an investor has a favored security, which it routinely purchases and later sells in a series of transactions? If so, there needs to be a cost layering system in place that assigns costs to different tranches of purchases. The cost associated with each tranche is then used to derive the adjusted cost basis of securities sold. The three allowable methods for associating investment costs with investment sales are:

- **Specific identification.** Costs are assigned to specific securities, which are used to offset the revenue generated by the sale of those securities at a later date.
- **FIFO.** The first securities acquired are assumed to be the first securities sold. This is the first-in, first-out concept.
- **Average cost.** The average cost of all securities acquired is used to derive the cost of securities when they are sold.

EXAMPLE

Tesla Power Company purchases 5,000 shares of the common stock of Nautilus Tours in three separate transactions, for which the details are:

Date	Number of Shares	Cost/each	Total Cost
April 4	1,000	$17.000	$17,000
April 15	1,500	18.250	27,375
April 29	2,500	18.400	46,000
	5,000	$18.075	$90,375

As indicated in the table, the average cost of these purchases was $18.075 per share. In May, Tesla's treasurer needs cash to fund operations, and so sells 2,000 shares of Nautilus. The adjusted cost basis of these 2,000 shares is $36,150, which is derived by multiplying the $18.075 average cost of the shares by the 2,000 shares sold.

What if Tesla had instead used the FIFO method to derive the cost of the 2,000 shares sold? If so, the cost calculation would have included the following layers of costs:

Date	Number of Shares	Cost/each	Total Cost
April 4	1,000	$17.000	$17,000
April 15	1,000	18.250	18,250
	2,000	$17.625	$35,250

The table indicates that using the FIFO method to derive cost results in a cost that is $900 lower than what was derived under the average cost method, since the more expensive tranche of shares purchased on April 29 is not included in the cost calculation.

Lump-Sum Purchases

There may be a situation in which an investor purchases several different securities in a single lump-sum transaction. If so, the costs of the securities are assigned based on their relative market values. The concept is illustrated in the following example.

EXAMPLE

Micron Metallic agrees to buy the entire securities portfolio of a competitor for $50,000. The portfolio is comprised of the following securities:

Security	Number of Units	Market Price	Extended Price	Proportions	Proportional Application
Common stock alpha	2,000	$15.25	$30,500	50.8%	$25,400
Preferred stock beta	500	15.00	7,500	12.5%	6,250
Bond Charlie	2,200	10.00	22,000	36.7%	18.350
	4,250		$60,000	100.0%	$50,000

As noted in the table, Micron's controller determines the relative market values of the various securities, and uses this calculation to assign costs that match the $50,000 total price paid.

The assignment of costs to securities based on their relative market values may not work if no market value can be obtained for some of the securities. If so, assign costs first to those securities that have an identifiable market value. The residual balance of the amount paid is assigned to the remaining securities.

EXAMPLE

Laid Back Corporation buys the portfolio of investments from a failing competitor for $80,000. This portfolio is comprised of two securities. The first security is common stock that is listed on a national stock exchange, and which has a current aggregate market price of $60,000. The second security is the restricted stock of a privately-held business for which there is no stock trading information. Since there is no reliable market value information for the second security, Laid Back's controller assigns $60,000 of cost to the first security, and the remaining $20,000 to the second security.

Restricted Stock

Ideally, one should measure restricted stock based on the fair value of the quoted price of an unrestricted security issued by the same entity that is identical to the restricted stock in all other respects, with an adjustment for the effect of the restriction.

Conversion of Securities

There are situations in which an investor may hold a convertible security, such as a convertible bond or convertible preferred stock. The conversion feature allows an investor to convert the security into the common stock of the issuer, using a pre-determined conversion ratio. This conversion feature is valuable to an investor, who is protected against a decline in his investment by the interest payments made on the security (if the security is convertible debt), while also retaining the upside potential of an increase in the price of the common stock into which the security can be converted. If the price of the issuing entity's common stock does not increase, the investor does not convert its holdings into common stock, and instead continues to receive interest payments.

Since the only reason to convert to the common stock of the issuer is to take advantage of a price increase in the common stock, there should always be a gain when this conversion occurs. The investor records the market value of the common stock that it receives from the conversion. The difference between the cost basis of the security given up and the market value of the replacement stock is recognized as a gain in the investor's income statement.

EXAMPLE

Hammer Industries owns 800 convertible bonds issued by Horton Corporation. The terms of the bonds state that they can be converted into ten shares of Horton's common stock, beginning five years after the issuance date of the bonds. Following the designated waiting period, Hammer's treasurer notes that the bonds have a market value of $800,000, while the amount of common stock into which the bonds could be converted has a market value of $845,000. The treasurer therefore converts of the bonds, and authorizes the controller to record the following transaction:

	Debit	Credit
Investments – Equity securities	845,000	
Investments – Convertible bonds		800,000
Gain on bond conversion		45,000

Sale of Securities

The basic transaction to record the sale of an investment is to debit the cash account and credit the investment account, thereby eliminating the investment from the balance sheet. There are two alternatives for how to deal with gains or losses associated with these investments, which are:

- **Realized gains and losses.** If an investment is classified as a trading security, any gains and losses associated with changes in its fair value have been recognized in earnings at the end of each reporting period, so there may be no gain or loss left to recognize. The only possible gain or loss will have arisen between the end of the last reporting period and the sale date.
- **Unrealized gains and losses.** If an investment is classified as available-for-sale, any unrealized holding gains and losses associated with changes in its fair value have been recognized in other comprehensive income. As of the sale date, shift these gains and losses from other comprehensive income to earnings.

Accounting for Investments – Dividends and Interest Income

Thus far, we have been solely concerned with the purchase and sale of investments. But what about the more mundane receipt of dividends and interest income from those investments? The accounting for these items is relatively simple. In both cases, it is recorded as a component of other income. This means it is not considered part of the revenue of the investor, but is instead recorded in a line item lower down in the income statement. The following example shows the flow of transactions required to account for these items.

EXAMPLE

Ninja Cutlery has purchased 2,000 shares of the common stock of Mulligan Imports. Mulligan's board of directors declares an annual dividend of $1.00 at its March board meeting, to be paid in May. Ninja's controller is informed of the dividend declaration, and records the following receivable in March:

	Debit	Credit
Dividends receivable	2,000	
Other income - dividends		2,000

Mulligan pays the dividend in May. Upon receipt of the cash, Ninja's controller records the following entry:

	Debit	Credit
Cash	2,000	
Dividends receivable		2,000

Ninja also bought $20,000 of the bonds of Spud Potato Farms at their face value. There is no discount or premium to be amortized. Spud pays 7% interest on these bonds at the end of each year. Upon receipt of the payment, Ninja's controller records the following transaction:

	Debit	Credit
Cash	1,400	
Other income - interest		1,400

Stock Dividends and Stock Splits

An issuer of equity securities may issue additional shares to its investors, which is called a stock dividend. Investors do not pay extra for these shares, so there is no need to record an accounting transaction. The only change from the perspective of the investor is that the cost basis per share has now declined, since the carrying amount of the investment is being spread over more shares.

EXAMPLE

Icelandic Cod owns 10,000 shares of Kelvin Corporation, for which the carrying amount on Icelandic's books is $124,000. At the end of the year, Kelvin's board of directors elects to issue a stock dividend to investors at a ratio of one additional share for every ten shares owned. This means that Icelandic receives an additional 1,000 shares of Kelvin. The issuance of the stock dividend alters Icelandic's cost basis in the stock as follows:

	Shares Held	Carrying Amount	Cost Basis per Share
Before stock dividend	10,000	$124,000	$12.40
After stock dividend	11,000	124,000	$11.27

An issuer may also conduct a stock split, where more than 20% to 25% of the shares outstanding prior to the issuance are issued to existing shareholders. Though the issuer is required to account for this transaction, the number of shares issued has no impact on the investor, who still has no accounting entry to make – there is just a reduction in the cost basis per share, as just noted for a stock dividend.

Noncash Dividends

What if an investor receives a dividend that is other than cash or additional shares of the issuer? If so, an asset is being received, so some valuation must be assigned to it. This valuation is recorded as the fair value of the asset received.

The Effective Interest Rate

If an entity buys or sells a financial instrument for an amount other than its face amount, this means that the interest rate it is actually earning or paying on the investment is different from the stated interest paid on the financial instrument. For example, if a company buys a bond for $95,000 that has a face amount of $100,000 and which pays interest of $5,000, then the actual interest it is earning on the investment is $5,000 ÷ $95,000, or 5.26%.

The *effective interest rate* exactly discounts estimated future cash payments or receipts over the expected life of a financial instrument. In essence, interest income or expense in a period is the carrying amount of a financial instrument multiplied by the effective interest rate.

EXAMPLE

Suture Corporation acquires a debt security having a stated principal amount of $100,000, which the issuer will repay in three years. The debt has a coupon interest rate of five percent, which it pays at the end of each year. Suture acquires the debt for $90,000, which is a discount of $10,000 from the principal amount of $100,000. Suture classifies the investment as held-to-maturity, and records this entry:

	Debit	Credit
Investments: Held-to-maturity debt securities	90,000	
Cash		90,000

Based on a cash outflow of $90,000 to acquire the investment, three interest payments of $5,000 each, and a principal payment of $100,000 upon maturity, Suture calculates an effective interest rate of 8.95 percent. Using this interest rate, the treasurer of Suture calculates the following amortization table:

Year	(A) Beginning Amortized Cost	(B) Interest and Principal Payments	(C) Interest Income [A x 8.95%]	(D) Debt Discount Amortization [C – B]	Ending Amortized Cost [A + D]
1	90,000	5,000	8,055	3,055	93,055
2	93,055	5,000	8,328	3,328	96,383
3	96,383	105,000	8,617	3,617	100,000

Using the table, Suture makes the following entries at the end of each of the next three years:

Year 1	Debit	Credit
Cash	5,000	
Investments: Held-to-maturity debt securities	3,055	
Interest income		8,055

Year 2	Debit	Credit
Cash	5,000	
Investments: Held-to-maturity debt securities	3,328	
Interest income		8,328

Year 3	Debit	Credit
Cash	105,000	
Investments: Held-to-maturity debt securities		96,383
Interest income		8,617

The effective interest method is preferable to the straight-line method of charging off premiums and discounts on financial instruments, because it is considerably more accurate. However, it is also more difficult to compute than the straight-line method.

The Funds Investment Procedure

The investment of funds is a minor issue for those businesses that are perpetually short on cash, since they merely park all available funds in their checking accounts. However, an organization with significant cash balances should consider a more methodical approach to investing, so that it can wring some additional interest income from its excess cash. A funds investment procedure is outlined below that can bring consistency to the investment process:

1. **Obtain cash forecast.** Obtain the most recent, finalized version of the cash forecast.
   Control issues: Be sure to obtain only the approved final version. There may be several earlier versions floating around in the department from one of the earlier iterations of the forecast.

2. **Calculate investable cash.** From the cash forecast, calculate the amount of cash available for investment purposes, as well as the time period over which the funds can be invested. Further, determine whether there is any cash being released from current investments that can be returned to an investment vehicle.

3. **Plan per investment guidelines.** Determine the best investment, based on the required liquidity level indicated by the cash forecast, and as allowed by the company's investment guidelines.
   Control issues: There should be investment guidelines approved by the chief financial officer that the treasury staff is required to follow when engaging in investing activities (see the Investment Guidelines section).

4. **Obtain quotes.** Contact the investment entities with which the company invests its funds, and obtain quotes from them for the best return on investment for the investment vehicle that the company plans to obtain. Summarize these quotes on a quote sheet. A sample investment quote sheet follows.
   Control issues: The treasurer should periodically examine the quote sheets to ensure that the treasury staff is obtaining quotes, rather than investing solely with one entity. The internal audit staff may also want to review the quote sheets to ensure that the treasury staff is complying with the company's investment policy.

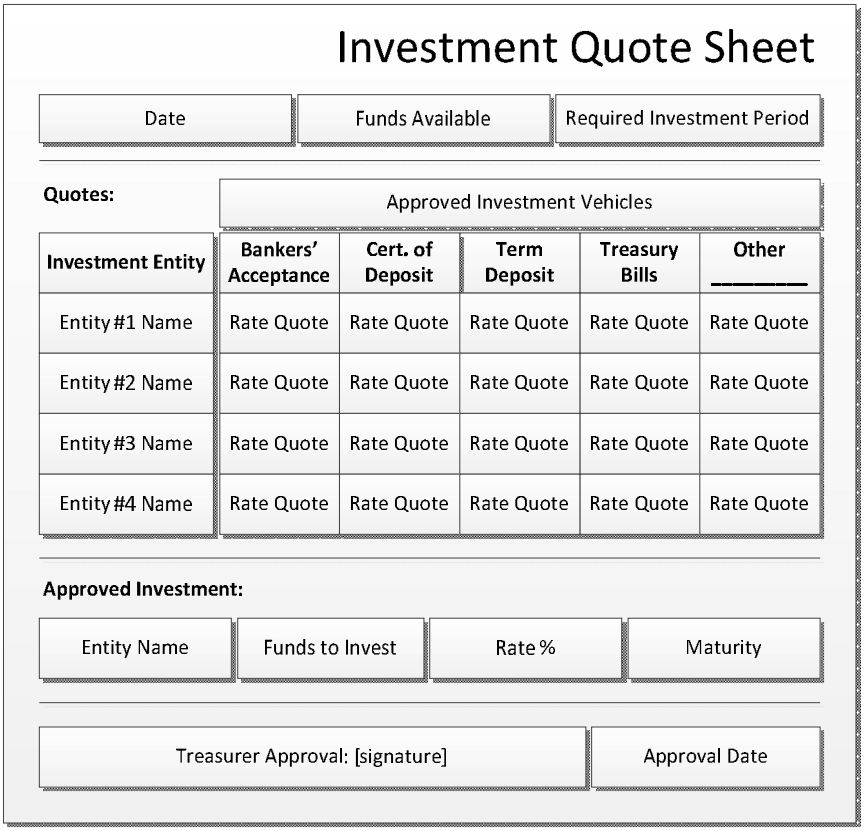
5. **Complete investment purchase form.** Based on the quotes listed on the quote sheet, select the best investment and document it on the investment purchase form. Have the treasurer review and approve the form.
   Control issues: The treasurer is ultimately responsible for the investments made by the company, and so should have the opportunity to review each one before it is finalized. The treasurer may also want to verify that the investment entities listed on the form are ones that the company has pre-approved.

6. **Make investments.** Send a copy of the investment form to the investment manager, who places the investment with the designated investment entity.

7. **Record transaction.** Upon receipt of a confirmation from the investment entity, send a copy of the confirmation and the investment form to the general ledger accountant, who records the investment in the general ledger. This transaction is a debit to the investment account and a credit to the cash account. Another copy goes to the person responsible for the cash forecast, who needs to know if the invested cash will not be available during any portion of the forecasting period.
   Control issues: The confirmation is always retained as proof that the proper investment was made. Also, the general ledger accountant could send a copy of each investment-related journal entry to the treasurer; this practice may lead to the detection of incorrect investments.

8. **File documents.** Staple the confirmation to the investment form and file the documents by date. These documents are useful as a reference source, and may be reviewed by the internal audit staff when they periodically investigate the treasury function.
   Control issues: Someone could periodically match the interest rate stated on the confirmation to the amount indicated in the initial quote, to see if an investment entity is in fact paying out the interest rate that it quoted.

Sample Investment Quote Sheet



Investment Quote Sheet

Date	Funds Available	Required Investment Period

Quotes:

	Approved Investment Vehicles				
Investment Entity	**Bankers' Acceptance**	**Cert. of Deposit**	**Term Deposit**	**Treasury Bills**	**Other _____**
Entity #1 Name	Rate Quote	Rate Quote	Rate Quote	Rate Quote	Rate Quote
Entity #2 Name	Rate Quote	Rate Quote	Rate Quote	Rate Quote	Rate Quote
Entity #3 Name	Rate Quote	Rate Quote	Rate Quote	Rate Quote	Rate Quote
Entity #4 Name	Rate Quote	Rate Quote	Rate Quote	Rate Quote	Rate Quote

Approved Investment:

Entity Name	Funds to Invest	Rate %	Maturity

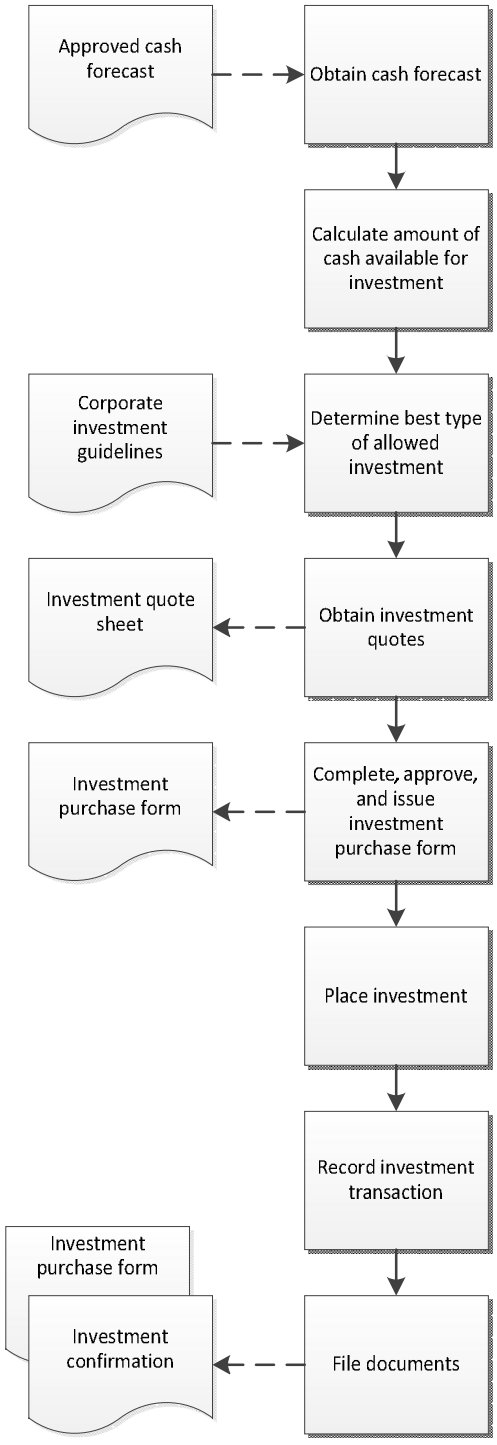
Treasurer Approval: [signature]	Approval Date

Tip: If an investment entity has a history of bidding one investment rate and paying a lower rate, that entity should be removed from the company's list of approved investment entities.

Tip: The treasury staff should reconcile the accounting records of investments at the end of each accounting period to their own records, and track down the reasons for any differences.

The following exhibit shows a streamlined view of the funds investment procedure.

Funds Investment Process Flow



Chapter Summary

While there are many investment alternatives available, it is entirely likely that an efficient treasury department will elect to concentrate its attention on a just a few alternatives, and probably on those that are transactionally most efficient to engage in on a regular basis. For example, a business with modest cash balances may enter into an automated overnight repurchase arrangement with its primary bank, and essentially forget about any additional investment activities. An alternative where there is more investable cash on hand is to make all investments through an investment portal that conveniently links participants with a specific cluster of available investment instruments (usually limited to time deposits and money market funds), such as 360T and FXall. Thus, convenience may prove to be the key reason for continually investing excess cash in the same types of investments.

If the treasury staff is willing to look beyond the most convenient investments and explore other options, the next most critical element of the investment decision will likely be the presence of an active secondary market. If there is such a market, it is much easier for the treasury staff to liquidate an investment before its maturity date. The result can be a broader range of choices when cash is available for investment even over a relatively short period of time.

Review Questions

1. Which of the following is not one of the major investment guidelines?
    A. Do not lose invested funds
    B. Invest the company pension plan in company stock
    C. Investments should be easily convertible into cash
    D. Earn a return on invested funds

2. Accruing an earnings credit is a reasonable investment strategy when:
    A. Interest rates are low
    B. There is an active treasury staff to manage investments
    C. The cash balance in an account is high
    D. Interest rates are high

3. The tiered investment strategy:
    A. Matches investment maturities to when cash will be needed
    B. Involves making investments of staggered durations
    C. Works best in situations where there is minimal cash on hand
    D. Assumes that some cash is unlikely to be used in the near term

4. A Yankee CD:
    A. Is denominated in a foreign currency
    B. Is issued by the United States government
    C. Is issued by foreign entities with operations in the United States
    D. Is issued by entities outside the United States

5. A company maintains a list of the holders of its _____ bonds.
    A. Coupon
    B. Registered
    C. Convertible
    D. Callable

Review Answers

1. A. Incorrect. Not losing invested funds is one of the major investment guidelines.
   B. **Correct.** Investing the company pension plan in company stock is not an investment guideline.
   C. Incorrect. Investment convertibility into cash is one of the major investment guidelines.
   D. Incorrect. Earning a return is one of the major investment guidelines.

2. A. **Correct.** Alternative investments may not yield a better payback when interest rates are low.
   B. Incorrect. An active treasury staff will probably locate better investments than the earnings credit.
   C. Incorrect. If the cash balance in an account is high, almost any other investment will earn more than the earnings credit.
   D. Incorrect. If interest rates are high, almost any other investment will have a better return than the earnings credit.

3. A. Incorrect. Matching maturities to usage is a different investment strategy.
   B. Incorrect. Making investments of staggered durations is the laddering strategy.
   C. Incorrect. Tiered investments work best when there is a large amount of cash on hand.
   D. **Correct.** The tiered investment strategy assumes that some cash is unlikely to be used in the near term.

4. A. Incorrect. A Yankee CD is not denominated in a foreign currency.
   B. Incorrect. A Yankee CD is not issued by the United States government.
   C. **Correct.** A Yankee CD is issued by foreign entities with operations in the United States.
   D. Incorrect. A Eurodollar CD is issued by entities outside the United States.

5. A. Incorrect. Coupon bonds are not tracked by the issuer.
   B. **Correct.** Registered bonds are tracked by the issuer.
   C. Incorrect. Convertible bonds are not tracked unless they are also registered.
   D. Incorrect. Callable bonds are not tracked unless they are also registered.

Chapter 10
Debt and Equity Funding

Learning Objectives

- Determine the function of the Ex-Im Bank
- Recognize a common debt covenant
- Spot an aspect of restricted stock
- Identify a characteristic of an accredited investor

Introduction

There will be times when the treasury staff must procure additional cash to meet short-term or long-term cash requirements. In this chapter, we describe a number of options for raising cash through the use of debt and equity financing. We touch upon not only the most common sources of funds—the line of credit and leases—but also less common alternatives, such as invoice discounting and inventory financing. The sale of stock is subject to federal regulatory requirements, so we address several exemptions from the rules that make it easier to raise cash through equity sales.

Overview of Debt and Equity Funding

A large part of the cash management task is ensuring that there is sufficient cash on hand to fund company operations. While some of this cash may come from company sales and maturing investments, it is also entirely possible that the treasury staff must raise cash from outside parties. The two main alternatives for obtaining funding are to obtain debt financing or sell stock.

If a company obtains financing, it must pay interest on the amount borrowed. There may also be a fee for an annual audit of the company's books by a bank-designated auditor, as well as an annual facility fee for keeping open a line of credit. The interest percentage may be variable, with the rate adjusting in accordance with a benchmark rate at regular intervals. If the rate is variable and may rise suddenly, a company is at some risk of incurring much higher interest expenses. These costs are mitigated by the tax deductibility of interest expense. For example, if a company incurs $100,000 of interest expense and is in the 35% incremental income tax bracket, it can use the $100,000 interest deduction to reduce its income tax liability by $35,000.

The main alternative to borrowing is to sell stock. The main advantage of this approach is that the company has no obligation to pay back its investors. In addition, lenders want to see a large amount of capital in a business before they will agree to issue a loan. On the downside, investors expect a larger return on their invested capital, either through dividends or appreciation in the price of their stock. Also, issuing more shares dilutes the ownership percentage of existing shareholders.

There are other options available for raising cash, such as using a variety of management techniques to extract cash from working capital (see the Working Capital Enhancements chapter), and selling assets.

The Line of Credit

A line of credit is a commitment from a lender to pay a company whenever it needs cash, up to a pre-set maximum limit. A line of credit is generally secured by company assets, which the lender can take if the company is unable to pay back the line of credit. A larger and more credit-worthy business may be able to avoid any collateral; if so, the lender is relying on the general credit quality of the company. The usual agreement under which a line of credit is granted requires the company to pay an annual fee in exchange for the lender's commitment to keep a certain amount of debt available for the company's use; this is called a *committed* line of credit. It is also possible to have a less formal arrangement at a lower cost,

where the lender is not obligated to make funds available to the company. This latter arrangement is called an *uncommitted* line of credit, and is useful for rare lending needs when a company has several sources of funds from which to choose.

When a bank offers a line of credit, it is typically under the agreement that the bank will also handle the company's other banking business, such as its checking accounts and lockboxes. This arrangement can be useful, since the treasury staff can monitor cash balances and routinely transfer borrowed funds back to the bank through an inexpensive intrabank transfer transaction. Doing so on a frequent basis minimizes the interest cost of the line of credit.

When entering into a line of credit arrangement, be sure to also obtain separate debt funding to handle all of the company's long-term debt needs. The reason is that a line of credit is intended to be a source of short-term funding *only*, which means that the line of credit balance is expected to drop to zero at some point each year. Otherwise, it will appear that the company is using the line as part of its long-term borrowing arrangements.

Invoice Discounting

Invoice discounting is the practice of using a company's unpaid accounts receivable as collateral for a loan, which is issued by a finance company. Invoice discounting essentially accelerates cash flow from customers, so that instead of waiting for customers to pay within their normal credit terms, you receive cash almost as soon as you issue the invoice.

This is an extremely short-term form of borrowing, since the finance company can alter the amount of debt outstanding as soon as the amount of accounts receivable collateral changes. The amount of debt issued by the finance company is less than the total amount of outstanding receivables (typically 80% of all invoices less than 90 days old).

The finance company earns money both from the interest rate it charges on the loan (which is well above the prime rate), and from a monthly fee to maintain the arrangement. The amount of interest that it charges the borrower is based on the amount of funds loaned, not the amount of funds available to be loaned.

Invoice discounting is impossible if another lender already has blanket title to all company assets as collateral on a different loan. In such cases, the other lender needs to waive its right to the accounts receivable collateral, and instead take a junior position behind the finance company.

From an operational perspective, the borrower sends an accounts receivable report to the finance company at least once a month, aggregating receivables into the categories required by the finance company. The finance company uses this information to adjust the amount of debt that it is willing to loan the borrower. The borrower retains control over the accounts receivable, which means that it is responsible for extending credit to customers, invoicing them, and collecting from them. There is no need to notify customers of the discounting arrangement.

Invoice discounting works best for companies with relatively high profit margins, since they can readily absorb the higher interest charges associated with this form of financing. It is especially common in high-profit businesses that are growing at a rapid rate, and need the cash flow to fund additional growth. Conversely, this is not a good form of financing for low-margin businesses, since the interest on the debt may eliminate any prospect of earning a profit.

Invoice discounting tends to be a financing source of last resort, because of the substantial fees associated with it. You would normally use it only after most other forms of financing have been attempted.

Inventory Financing

The preceding section discussed how to use accounts receivable as collateral for a loan. The same approach can be applied to inventory. To make this arrangement work to the satisfaction of the lender, the inventory being used as collateral is placed in a controlled area and under the supervision of a third party that only releases inventory with the approval of the lender. The lender is paid from the proceeds of inventory sales. Under a less controlled environment, the lender may agree to periodic inventory reports

by the borrower, with inspections of the inventory to ensure that the counted amounts match the borrower's reports.

There must be a sufficient amount of insurance in place to ensure that the lender will be paid back if the inventory is destroyed or damaged. Also, depending on state laws, it may be necessary to post notices around the collateralized inventory, stating that a lien has been imposed on the inventory.

If the amount of inventory being used as collateral drops below the amount of the loan associated with it, the borrower must immediately pay the lender the difference.

Because of the cost of third party monitoring, inventory financing is one of the more expensive forms of financing available and can also be quite intrusive, and so is used only after less-expensive alternatives have been explored. The only advantage of this form of financing is that the lender relies exclusively on the inventory to ensure that it is repaid; it does not impose covenants on the borrower.

Agency Financing

When a company needs to finance the export or import of goods, this can constitute a large surge in borrowings that cannot be supported by its line of credit. A good alternative is to use agency-backed financing for these transactions. An "agency" is a government-sponsored export credit agency, such as the Export-Import Bank (Ex-Im Bank) of the United States. These agencies provide financial packages for the export or import of goods. A typical financing arrangement is for a commercial bank to supply credit to the borrowing entity, with the agency providing a credit guarantee to the bank. Alternatively, an agency may directly provide credit, thereby eliminating the need for an intermediary bank.

Agencies are not in the business of losing money on their financing packages, so minimum standards apply to all applications. For example, a first-time applicant to the Ex-Im Bank of the United States must meet the following criteria:

- Has been in the same line of business for at least three years
- Has at least one year of exporting experience
- Had an operating profit in the most recent fiscal year
- Has a Dun & Bradstreet Paydex score of at least 50, as well as no derogatory information
- Has signed financial statements for the last fiscal year that shows positive net worth
- Has no material adverse issues

In addition, the Ex-Im Bank may require corporate guarantees, personal guarantees, and/or collateral. Thus, agencies do not gratuitously give away funds; a company must qualify for financing under specific standards, and may be turned down. Nonetheless, this is a viable alternative when other sources of funds are not available.

Leases

When cash is needed to acquire a fixed asset, an excellent choice is to do so with a lease, rather than using cash from other sources. A lease is an agreement under which the lessee makes a number of incremental payments to the lessor, rather than a lump sum payment, while the lessor owns the asset associated with the lease. A lease can be structured so that the lessee owns the asset at the end of the lease term, which is called a *capital lease*. If the lessor continues to own the asset at the end of the lease, then the lease is called an *operating lease*. See the Accounting for a Lease section for more information about how to record the two types of leases.

Leases are especially useful under the following circumstances:

- **Cash flow.** Lease payments are spread out over the term of a lease, thereby keeping a business from having to deal with large one-time cash outflows to purchase assets.
- **Covenants.** A lessor does not impose any covenants on a company as a whole, since it is only concerned with the specific asset it is leasing to the company. Thus, a company wanting to avoid covenants should consider leases.

- **Specific collateralization.** When a company has pledged its other assets under a blanket collateralization agreement for another loan, a lease essentially segregates a single asset as collateral for a new loan (the lease).

There are two problems with leases. First, the company is committing to a minimum set of lease payments, which can be quite expensive to terminate early. Second, it can be difficult to ascertain the interest rate used to compile lease payments, so be sure to manually derive the interest rate before agreeing to a lease.

The Long-Term Loan

When a company finds that it is unable to draw its line of credit down to zero at any point during the year, this means that its funding needs have become more long-term. If so, it should apply to a lender for a long-term loan that will be paid off over a number of years.

The following points may clarify whether it is even possible to obtain such a loan, and whether you would want to do so:

- **Banking services.** The provider of a long-term loan may insist on providing a complete package of banking services, to maximize its profits. If so, expect to shift all bank accounts, lines of credit, lockboxes, and other services to the lender.
- **Cash flow.** The lender is particularly sensitive to the historical and projected performance of the business, since the loan must be repaid from continuing cash flows. If positive cash flows have been a rare event, it will be very difficult to obtain a long-term loan. The lender may also want to see a budget for at least the next year.
- **Covenants.** The lender will probably impose covenants on the company that are designed to keep it from disbursing cash outside of the normal course of business. In particular, dividends may be restricted.
- **Creditor positioning.** A lender willing to commit to a long-term loan will certainly want to be designated as having the senior position among all creditors of the company, so that it will be more likely to be paid back in the event of a loan default by the company. This positioning is necessary, because the lender is committing a large amount of funds to the company over a long period of time, during which the company's financial results may change dramatically.
- **Personal guarantee.** In a smaller business where there are few owners, and especially where historical cash flow has been uncertain, the lender may insist on personal guarantees that allow the lender to pursue the owners for repayment.

A long-term loan can be configured as a series of fixed payments, or as interest-only payments with a large balloon payment due at the end of the loan. While the balloon payment option may appear tempting from a short-term cash flow perspective, it introduces the risk that credit conditions may have changed by the time it is due for payment, making it difficult to refinance.

Tip: If there is a loan with a balloon payment, begin watching trends in interest rates and credit availability well before the payment is due, and roll over the loan into a new debt instrument early, if reduced interest rates warrant such action.

The conditions associated with a long-term loan might leave management less inclined to pursue this option. However, a long-term loan allows a business to lock in debt for an extended period of time, without having to worry about the vagaries of the short-term credit markets. Thus, it can make sense to assign a portion of a company's debt to longer-term loans.

Debt coming due within one year must be classified as short-term debt on a company's balance sheet, which can give the impression that a business has looming liquidity issues. This impression may be more important for publicly-held organizations to avoid, so they are more likely to negotiate for longer terms

before the one-year limit arrives. The owners of a privately-held business may be less concerned with this possibility of a future liquidity problem, and so are more likely to renegotiate the maturity of loans closer to their maturity dates.

Tip: It is less risky to obtain debt financing from several lenders. Otherwise, the company is at risk of having a single counterparty make the decision to stop lending within the company's industry, and have to scramble to find replacement debt on short notice.

Debt Covenants

Lenders routinely require borrowers to sign off on debt covenants, which are conditions related to company operations and practices. If a lender breaches a covenant, the lender may be able to terminate the borrowing arrangement and accelerate payment of the loan. Consequently, the treasurer should have a detailed understanding of all debt covenants currently in force, and monitor the company's compliance with them. In particular, consider the following techniques to reduce the risk of covenant breaches:

- Before agreeing to a covenant, create a model of the company's expected future performance, and create several worst-case scenarios to see if the company is at risk of a breach. If so, negotiate for covenants that fall outside of a reasonable worst-case scenario.
- Include on the checklist of month-end closing activities a comparison of preliminary results to covenants, to obtain early warning of a possible breach.
- Every time a loan renewal is negotiated, work on a relaxation of the existing covenants.
- Negotiate hard to avoid covenants that are outside of the control of the company, such as the effects of exchange rate fluctuations on the business.

Tip: If covenants are required as part of a loan agreement, make sure that there is a grace period during which the company is allowed to cure any covenant breach.

A lender may impose covenants that are specifically tailored to the borrower. However, most covenants are of the boilerplate variety, and will be found in any loan agreement. Common covenants include:

- Dividends cannot be paid during the term of the loan
- Net worth must exceed $___
- The net worth to total liabilities ratio must exceed ___
- The current ratio must exceed ___

A loan agreement may also include a material adverse changes clause, under which the lender can terminate the loan if the company's financial condition takes a significant turn for the worse. If the lender insists on including this clause, be sure to integrate numeric minimums that the company must breach before the clause can be invoked. Otherwise, the clause is too judgmental, and can be invoked at the whim of the lender.

If a company breaches a covenant, it does not automatically mean that the lender will demand immediate loan repayment. The lender may waive any rights triggered by a breach, or it may require that the borrower agree to additional covenants or other requirements. For example, the lender may require more collateral, a higher interest rate or shorter maturity on the loan, or a smaller loan.

Whenever there is a covenant breach, the lender will probably want to learn more about the reason for the breach, any impact on the company's future financial performance, and its ability to pay back the loan. The nature of the lender's response to the breach will likely depend upon how the company answers its questions about these issues.

In short, lenders like to impose covenants, and have the ability to do so during periods of restricted credit when borrowers have few other options. Given the risk of loan acceleration posed by covenants, borrowers always want to loosen or eliminate covenants to the greatest extent possible, and will be particularly aggressive in doing so when they have multiple lenders available.

The Borrowing Base

A borrowing base is the total amount of collateral against which a lender will lend funds to a business. This typically involves multiplying a discount factor by each type of asset used as collateral. For example:

- **Accounts receivable.** 60% to 80% of accounts receivable less than 90 days old may be accepted as a borrowing base.
- **Inventory.** 50% of finished goods inventory may be accepted as a borrowing base.

It is also common for a lender to only use the accounts receivable of a borrower as collateral - it may not accept any inventory as part of the borrowing base.

EXAMPLE

Suture Corporation applies for a line of credit. Suture has $100,000 of accounts receivable and $40,000 of finished goods inventory. The lender allows 70% of the accounts receivable and 50% of the inventory as the relevant borrowing base, which means that Suture can borrow a maximum of $90,000 (calculated as $70,000 of accounts receivable and $20,000 of inventory) against its collateral.

A business that borrows money under a borrowing base arrangement usually fills out a *borrowing base certificate* at regular intervals, in which it calculates the applicable borrowing base. A company officer signs the certificate and submits it to the lender, which retains it as proof of the available amount of collateral. If the borrowing base stated on the certificate is less than the amount that the company is currently borrowing from the lender, then the company must pay the difference to the lender at once.

Careful monitoring of the borrowing base is of particular importance in seasonal businesses, since the inventory portion of the base gradually builds prior to the selling season, followed by a sharp increase in the receivable asset during the selling season, and then a rapid decline in all assets immediately after the season has been completed. It is necessary to balance loan drawdowns and repayments against these rapid changes in the borrowing base to ensure that the company does not violate its loan agreement.

Debt Risk Issues

How much debt should a company have? How hard should lenders be pushed for better terms? And when should debt be renewed? These questions and other factors are impacted by a variety of risks associated with debt. In a simplistic universe, a treasurer only borrows enough to meet forecasted needs, bargains hard with a single lender for the best rates, and rolls over debt agreements shortly before they are scheduled to terminate. From a risk perspective, this simplistic view can result in serious problems, of which the most important is the lender suddenly backing out of a loan renewal for reasons that have nothing to do with the company. It is entirely possible that there has been a general tightening of credit, and the lender is no longer rolling over debt. A treasurer who wants to guard against debt risk should consider all of the following options:

- **Arrange for extra debt.** Even if the company does not need it, consider setting up a multi-year debt arrangement. The long-term nature of the agreement is crucial, since it makes cash available to the company even during periods when credit would not otherwise be available. Since the excess cash made available through such an arrangement can be invested, the net effect on interest expense of having extra debt is not especially high.
- **Ensure that the lender earns a profit.** Though it may be tempting to squeeze lenders to keep fees low, it may make sense to deliberately allow them a reasonable profit, as well as to make all scheduled payments on time. By doing so, lenders will be more inclined to continue offering the company credit when they might not otherwise do so.

Tip: Periodically compile a listing of the fees the company pays to each of the banks with which it does business. The company will have more lending leverage over those banks to which it pays the most fees.

Tip: If the company has a procurement card program, source this work through a favored bank, to concentrate more fees with it and thereby give the company more leverage over the bank in regard to lending arrangements.

- **Have multiple lenders.** One lender may be forced by circumstances to tighten credit, but this does not mean that *all* lenders will do so. Consequently, it is best to arrange loans with several lenders. Do not take this concept too far, since giving a small slice of a company's business to a large number of banks means that no single bank has an overwhelming interest in continuing to do business with the company.
- **Renew credit facilities early.** Begin the refinancing of existing debt agreements well in advance of their termination dates. By doing so, replacement agreements will be in place before there is any risk of a last-minute credit tightening that might cause a scramble for new sources of debt.
- **Have a balanced redemption schedule.** Do not schedule all loans to be repaid within a short period of time, since this puts too much pressure on the company to come up with alternative financing within a short period of time. Instead, stagger redemptions across a broad range of dates.
- **Build relations.** The CEO and CFO of the company should seek out their lender counterparts, and engage in regular discussions. By building close relations between the upper ends of both organizations, it is more likely that lenders will continue to offer credit facilities to the company. In addition, the treasurer should be in contact with the lender's designated relationship manager at regular intervals.

Restricted and Unrestricted Stock

Restricted stock carries a restriction statement on the face or back of the certificate, stating that there are restrictions on its transfer, purchase, or resale. This restriction is usually because the issuing company has not yet registered the shares with the Securities and Exchange Commission (SEC). It can be quite difficult for the holder of restricted shares to move the shares to a different owner. An example of the restriction verbiage shown on a stock certificate is:

> "These securities may not be sold, offered for sale, or pledged in the absence of a registration statement."

Unrestricted stock does not contain a restriction legend, and so can be sold or transferred. Because of the issues with restricted stock, the typical investor is much more interested in buying unrestricted stock from a company. We will discuss unrestricted stock in the next section, following by later sections that address various exemptions from the SEC rules for the sale of stock.

Registered Stock

Investors are always the most interested in buying unrestricted stock, which is also known as registered stock. A company that wants to sell registered stock must file a Form S-1 registration statement with the SEC. The Form S-1 is an extremely detailed document that describes a company's financial and operational condition, as well as other matters. Among the more important categories of information in the form are:

- **Risk factors.** States the risks that may impact the company.
- **Use of proceeds.** Notes how the cash garnered from sale of the stock will be used.
- **Selling security holders.** Lists any current shareholders whose shares in the company are being sold.
- **Registrant information.** Describes the company, its financial results, management's discussion and analysis of the company, legal proceedings, and many other matters.

Completing the form properly requires the services of the company's auditors and attorneys, as well as their assistance when the SEC sends back several iterations of questions about the information in the form. It is likely that a number of months will pass before the SEC declares the form effective, which means that the stock listed in the form is now registered, and can be sold without restriction.

Once a Form S-1 has been declared effective, the company having made the filing is now considered a publicly-held company, which means that it must file regular reports with the SEC about its financial results and material changes in its business. These matters are discussed further in the author's *Investor Relations Guidebook*.

If a company is already publicly-held, it can use a *shelf registration* to pre-register stock that it does not necessarily plan to sell immediately. This still involves the difficult registration process, but the company is in less of a rush to complete it, since there is not an immediate need to sell shares. Under SEC rules, shelf registration requirements are eased for larger public companies.

In general, a privately-held company will want to stay that way, since the costs of registering stock and making subsequent filings with the SEC as a public company are substantial. If the owners and/or managers of the company do not wish to issue registered stock, then there are several exemptions from the SEC rules that may provide a reasonable alternative. In the following sections, we describe the concept of the accredited investor and the Regulation D stock sales to this special type of investor. We also cover another popular exemption, the Regulation A stock sale, which does not require accredited investors, but which is limited in terms of the amount of cash that can be raised.

The Accredited Investor

An accredited investor qualifies under SEC rules as being financially sophisticated. The SEC definition of an accredited investor is:

1. A bank, insurance company, registered investment company, business development company, or small business investment company;
2. An employee benefit plan, within the meaning of the Employee Retirement Income Security Act, if a bank, insurance company, or registered investment adviser makes the investment decisions, or if the plan has total assets in excess of $5 million;
3. A charitable organization, corporation, or partnership with assets exceeding $5 million;
4. A director, executive officer, or general partner of the company selling the securities;
5. A business in which all the equity owners are accredited investors;
6. A natural person who has individual net worth, or joint net worth with the person's spouse, that exceeds $1 million at the time of the purchase, excluding the value of the primary residence of such person;
7. A natural person with income exceeding $200,000 in each of the two most recent years or joint income with a spouse exceeding $300,000 for those years and a reasonable expectation of the same income level in the current year; or
8. A trust with assets in excess of $5 million, not formed to acquire the securities offered, whose purchases a sophisticated person makes.

This definition comes from Rule 501 of the SEC's Regulation D.

The accredited investor can be of considerable importance when a company is interested in the sale of unregistered securities, as described in the next section.

Regulation D Stock Sales

Regulation D provides an exemption from the normal stock registration requirement, and is most useful when a company is still privately held. There are different rules and allowed funding amounts available under Regulation D, which are described in its Rules 504, 505, and 506. In general, to sell shares under Regulation D, a company must follow these rules:

- Only sell shares to accredited investors.

- Investors cannot be contacted through a general solicitation, such as advertising or free seminars open to the public.
- If shares are sold over a long time period, prove that all sales are covered by Regulation D. This can be proven by documenting a financing plan, selling the same type of stock to all investors, showing that all shares are sold for the same type of consideration, *and* by proving that the sales are being made for the same general purpose.

Because of the inability to advertise a stock sale, companies usually have to turn to investment bankers, who contact their clients to see who is interested in buying shares. The bankers impose a fee for this service, which is a percentage of the amount of funds generated.

If a prospective investor is interested in buying shares, the company sends them a boilerplate questionnaire to fill out, in which they state that they are accredited investors. This form provides the company with legal protection, in case the SEC questions whether the stock issuance is protected by Regulation D.

Investors then send their money to an escrow account that is maintained by a third party, until such time as the total amount of funding meets the minimum requirement set by the company. The investment banker then extracts its fee from the escrowed funds, the company collects its cash, and the company's stock transfer agent sends stock certificates to the investors.

Shares issued under Regulation D are not initially registered, which means that a restriction statement appears on the back of each certificate. This statement essentially prohibits the shareholder from selling to a third party.

This restriction on the resale of stock is usually a considerable concern for all but the most long-term investors. Accordingly, investors like to see one or more of the following guarantees being offered by a company:

- **Piggyback rights.** The company promises to include their shares in any stock registration statement that it may eventually file with the SEC. This is a near-universal inclusion in a Regulation D offering, since it does not impose an immediate obligation on the company.
- **Registration promise.** The company promises to file a registration statement with the SEC by a certain date. If the company is currently privately-held, this promise essentially requires it to become publicly-held, along with the various ongoing SEC filing requirements that are part of being a public company. A more onerous agreement will even require the company to issue additional stock if it does not obtain SEC approval of the registration statement by a certain date.

The downside of using a Regulation D stock sale is that investors typically want something extra in exchange for buying unregistered stock. This may take the form of a reduced price per share. In addition, investors may demand warrants, which are a formal right to buy additional company stock at a certain exercise price.

EXAMPLE

Suture Corporation sells 10,000 shares of its common stock for $10.00, along with 10,000 warrants to buy additional shares of the company for the next three years at $10.00 per share. The price of the company's stock later rises to $17.00, at which point the investor uses his warrant privileges to buy an additional 10,000 shares at $10.00 each. If he can then have the shares registered and sells them at the $17.00 market price, he will pocket a profit of $70,000 on his exercise of the warrants.

A company is paying a steep price if it issues warrants and then experiences a steep increase in its stock price, since the recipient of the warrants will eventually buy shares from the company at what will then be an inordinately low price. If the company had not issued warrants, it would instead be able to later sell shares at the full market price.

If an investor wants one warrant for every share purchased, this is called 100% warrant coverage. If an investor agrees to one warrant for every two shares purchased, this is called 50% warrant coverage.

These are the two most common warrant issuance terms, though any proportion of warrants to shares purchased may be agreed to.

An even more serious downside of using Regulation D is when prospective investors insist upon buying preferred stock, rather than common stock. Preferred stock may include a number of oppressive terms, such as favorable conversion rights into common stock, the payment of dividends, and perhaps even override voting privileges concerning the sale of the company or other matters.

Given the number of rights that investors may demand in a Regulation D stock sale, it is best to only use this approach when the company is operating from a position of strength, where it does not have an immediate need for cash.

Regulation A Stock Sales

The preceding discussion of Regulation D was oriented toward stock sales to accredited investors. What if a company does not have access to this group of wealthy investors, or cannot find any who are willing to invest? An alternative is available under the Regulation A exemption.

Under Regulation A, a company is limited to raising no more than $5 million per year. Also, there is no limit to the number of investors who can buy the company's stock, and none of these investors need to be classified as accredited investors. Further, the company is not required to file any ongoing reports with the SEC. Finally, the shares sold under Regulation A are *not restricted*. The lack of a stock restriction should eliminate the need for any price discounts to investors, or the issuance of warrants. However, any company using this exemption is presumably so small that the market for its shares is microscopic, which means that investors will still have a difficult time selling their shares.

Of the maximum $5 million that can be raised, $1.5 million can be stock that is being sold by existing shareholders (though there are limitations on stock sales by company affiliates). Thus, Regulation A can be an avenue through which investors holding unregistered stock can sell their shares. The remaining allowable amount under the Regulation must be in the form of funds raised for use by the company.

There are some restrictions on the use of Regulation A. This exemption cannot be used under the following circumstances:

- The company has been investigated by the SEC for disclosure problems during the preceding five years
- The SEC is currently reviewing a registration statement filed by the company
- Any affiliates of the company, or its underwriter, have been convicted of a securities-related crime within the past 10 years

If a company qualifies for this exemption, the basic process flow is to issue an SEC-reviewed offering circular to attract investors, then file a Form 1-A with the SEC, then sell shares, and then file a Form 2-A at regular intervals until the offering has been completed. Though the filing requirements associated with this exemption are less than those required for an initial public offering, they are still substantial enough to require the services of an attorney and accountant. A company may find that the expense of using the Regulation An exemption is not sufficiently offset by the relatively minor amount of cash that can be raised with it.

In short, Regulation A is designed to be a moderately streamlined way to raise a small amount of cash. If there is a need to raise larger amounts of cash without going public, the Regulation D exemption is a better choice.

Accounting for a Loan

Loan payments are among the simpler transactions to account for. If there is a line of credit, the bank will issue a confirmation of each debt issuance or payback, which forms the basis for an entry to record a change in the line of credit liability account. The bank also sends a notice of interest expense owed at the end of each month, which can be recorded like any other account payable. The amount may be automatically deducted from the company's checking account with an ACH debit, in which case the interest is recorded as part of the bank reconciliation process.

If the company is making a fixed monthly payment under a long-term loan arrangement, part of the payment is a reduction in loan principal, and part is interest expense. The amounts may be separately stated on the invoice issued by the bank, or provided by the bank at the start of the loan arrangement in a table that states the principal and interest for every upcoming loan payment. The standard journal entry for this type of payments is:

	Debit	Credit
Long-term loan	xx,xxx	
Interest expense	xx,xxx	
Cash		xx,xxx

Tip: Periodically reconcile the company's remaining principal balance to the amount recorded by the bank, so there are no variances to explain to the auditors at the end of the year.

Accounting for a Lease

A capital lease is one in which the lessee records the underlying asset as though it owns the asset. This means that the lessor is treated as a party that happens to be financing an asset that the lessee owns. The lessor should record a lease as a capital lease if any of the following criteria are met:

- The lease period covers at least 75% of the useful life of the asset; or
- There is an option to buy the leased asset following the lease expiration at a below-market rate; or
- Ownership of the leased asset shifts to the lessee following the lease expiration; or
- The present value of the minimum lease payments totals at least 90% of the fair value of the asset at the beginning of the lease.

If an examination of these criteria indicates that a leased asset is a capital lease, the accounting for the lease is comprised of the following activities:

1. **Initial recordation.** Calculate the present value of all lease payments; this will be the recorded cost of the asset. Record the amount as a debit to the appropriate fixed asset account, and a credit to the capital lease liability account. For example, if the present value of all lease payments for a production machine is $100,000, record it as a debit of $100,000 to the production equipment account and a credit of $100,000 to the capital lease liability account.
2. **Lease payments.** As the company receives lease invoices from the lessor, record a portion of each invoice as interest expense and use the remainder to reduce the balance in the capital lease liability account. Eventually, this means that the balance in the capital lease liability account should be brought down to zero. For example, if a lease payment were for a total of $1,000 and $120 of that amount were for interest expense, the entry would be a debit of $880 to the capital lease liability account, a debit of $120 to the interest expense account, and a credit of $1,000 to the accounts payable account.
3. **Depreciation.** Since an asset recorded through a capital lease is essentially no different from any other fixed asset, it must be depreciated in the normal manner, where periodic depreciation is based on a combination of the recorded asset cost, any salvage value, and its useful life. For example, if an asset has a cost of $100,000, no expected salvage value, and a 10-year useful life, the annual depreciation entry for it will be a debit of $10,000 to the depreciation expense account and a credit to the accumulated depreciation account.
4. **Disposal.** When the asset is disposed of, the fixed asset account in which it was originally recorded is credited and the accumulated depreciation account is debited, so that the balances in these accounts related to the asset are eliminated. If there is a difference between the net carrying amount of the asset and its sale price, it is recorded as a gain or loss in the period when the disposal transaction occurred.

In short, the accounting for a "normal" fixed asset and one acquired through a lease are the same, except for the derivation of the initial asset cost and the subsequent treatment of lease payments.

If a lease arrangement does not meet any of the preceding criteria for a capital lease, it is designated as an *operating lease*. The accounting for an operating lease is extremely simple. Each lease payment is treated as a rental payment, which means that the asset is owned by the lessor, and the lessee only has to record the full amount of each lease payment as an expense.

Accounting for the Sale of Stock

The structure of a journal entry for the cash sale of stock depends upon the existence and size of any par value associated with the stock. Par value is the legal capital per share, and is printed on the face of the stock certificate.

If the business is selling common stock, which is the most frequent scenario, then record a credit in the common stock account for the amount of the par value of each share sold, and an additional credit for any additional amounts paid by investors in the additional paid-in capital account. Then record the amount of cash received as a debit to the cash account.

EXAMPLE

Suture Corporation sells 10,000 shares of its common stock for $8 per share. The stock has a par value of $0.01. Suture records the share issuance with the following entry:

	Debit	Credit
Cash	80,000	
Common stock ($0.01 par value)		100
Additional paid-in capital		79,900

If Suture were to only sell the stock for an amount equal to the par value, then the entire credit would be to the common stock account. There would be no entry to the additional paid-in capital account.

If a company were selling preferred stock instead of common stock, the entry would be the same, except that the accounts in which the entries are made would be identified as preferred stock accounts, not common stock.

The Line of Credit Borrowing Procedure

One of the most common tasks for the treasury department is to borrow from the corporate line of credit. If the company has made the decision to maintain a low cash balance and fund most of its expenditures from a line of credit, then shifting cash into and out of a line of credit may be a daily or weekly event. The procedure for borrowing from a line of credit is outlined below:

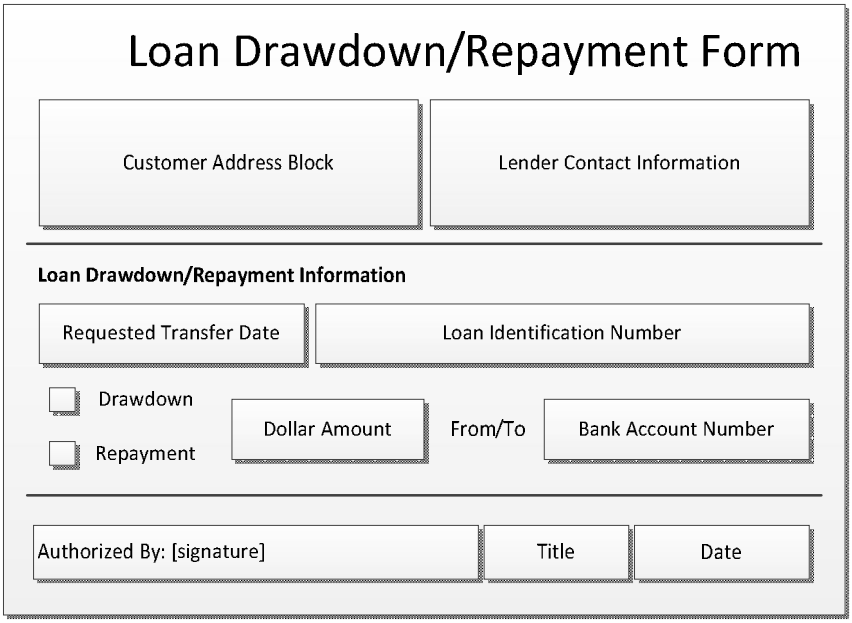
1. **Determine cash requirements.** Review the near-term cash forecast to estimate the amount of cash that must be borrowed from the line of credit.

2. **Calculate debt availability.** Calculate the amount of the borrowing base that can be applied to the line of credit. For example, a lender might allow a borrowing base of 80% of accounts receivable that are less than 90 days old. If the amount of the borrowing base is currently $500,000 and the amount of the line of credit already extended is $400,000, then the amount of available debt is $100,000.

Tip: There is a certain amount of flex in the calculation of debt availability, since many businesses issue a large number of invoices at the end of each month, which creates a surge in the borrowing base and therefore the amount of available debt. Thus, it may be possible to borrow considerably more money a few days after month-end than a few days before month-end.

3. **Complete borrowing form.** Fill out a loan drawdown/repayment form that stipulates the amount of cash that the company needs, when the cash should be transferred, and the number of the account into which the funds should be deposited. A sample of the form follows. Have an authorized person review and sign the form.
   Control issues: Keep a copy of each authorized drawdown/repayment form. The auditors may want to review these forms to see if all borrowings and repayments were authorized.

Sample Drawdown/Repayment Form



Tip: The lender may be comfortable with increasing a line of credit with just a phone call from the treasury staff. However, it is better to document and authorize the approval of additional debt with a borrowing form.

4. **Deliver form to lender.** Either e-mail or fax the form to the lender. Contact the lender to confirm receipt of the document. Confirm that the cash has been transferred into the designated company bank account.

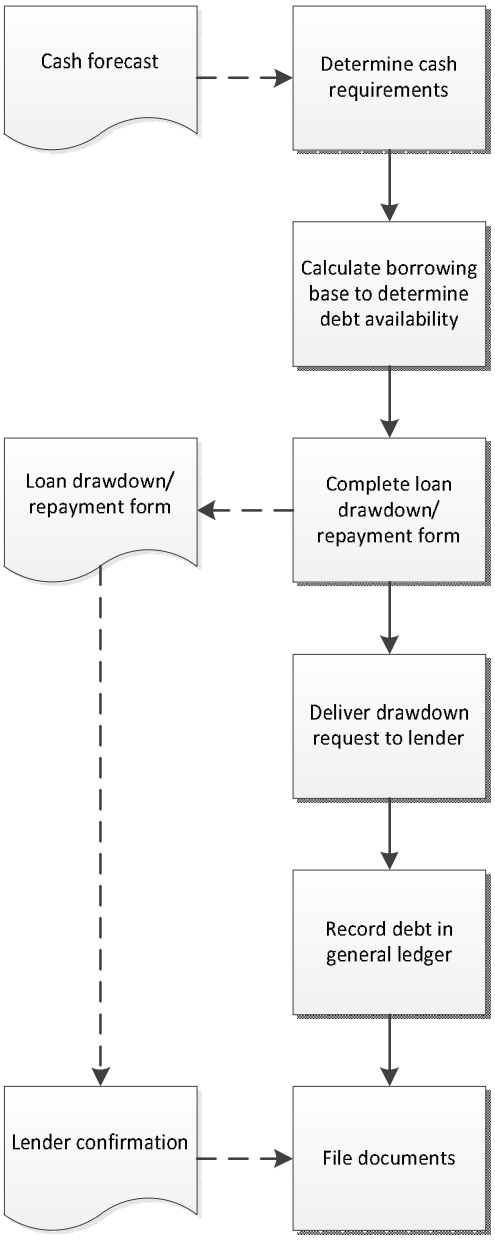
5. **Record debt.** Send a copy of the drawdown/repayment form to the general ledger accountant, who records it in the general ledger.
   Control issues: The treasury staff may want to maintain its own informal reckoning of the outstanding amount of the line of credit, and compare it to the stated amount in the financial statements at the end of each month.

6. **File documents.** The lender should send a confirmation of any line of credit drawdown. Staple this confirmation to the department's copy of the drawdown/repayment form and file it.

Tip: The treasury staff should reconcile any differences between the company's record of a loan balance and the loan balance indicated by the lender.

The following exhibit shows a streamlined view of the line of credit borrowing procedure.

Borrowing Process Flow



Chapter Summary

In a rapidly growing company, obtaining more cash from outside sources is the primary task of the treasury department. While some companies engage in ongoing rounds of stock sales, this is by no means the only way to obtain cash. In this chapter, we have covered a number of other options for raising funds. Ideally, the best solution may turn out to be a combination of equity and debt, since lenders are always more comfortable loaning cash when a company has a large amount of equity. Consequently, the treasurer may find that the sale of stock can be immediately followed by the acquisition of additional debt, which means that selling stock has a multiplier effect on the amount of debt that lenders are willing to extend.

Review Questions

1. Invoice discounting is:
    A. The practice of allowing customers a discount on their invoices
    B. The practice of using receivables as collateral for a loan
    C. The delayed payment of receivables
    D. A useful option if a company has low profit margins

2. A balloon payment is a common feature in:
    A. A line of credit
    B. Agency financing
    C. Invoice discounting
    D. A long-term loan

3. The borrowing base is typically derived from:
    A. Accounts receivable
    B. Fixed assets
    C. Accounts payable
    D. Goodwill

4. A shelf registration is used to:
    A. Avoid the SEC registration process
    B. Sell the securities of a privately-held business
    C. Pre-register stock that is not to be sold at once
    D. Issue stock under the Regulation D exemption

5. Regulation D stock sales do <u>not</u> allow:
    A. Participation by accredited investors
    B. A general solicitation
    C. The participation of investment bankers
    D. The use of an escrow account

Review Answers

1. A. Incorrect. Invoice discounting does not involve early payment discounts.
   B. **Correct.** Invoice discounting uses receivables as collateral for a loan.
   C. Incorrect. The speed of receivable collection is not impacted by invoice discounting.
   D. Incorrect. Discounting is expensive, and so is a better alternative for companies with high profit margins.

2. A. Incorrect. A line of credit usually must be dropped to a zero balance at some point during its term.
   B. Incorrect. Agency financing does not involve a balloon payment.
   C. Incorrect. Invoice discounting uses receivables as collateral, and involves rapid loan turnover.
   D. **Correct.** A long-term loan may include a balloon payment feature.

3. A. **Correct.** The borrowing base is typically derived from accounts receivable.
   B. Incorrect. The borrowing base is not derived from fixed assets.
   C. Incorrect. The borrowing base is not derived from accounts payable.
   D. Incorrect. The borrowing base is not derived from the recorded amount of goodwill.

4. A. Incorrect. A shelf registration does not avoid the SEC securities registration process.
   B. Incorrect. A shelf registration can only be used by a publicly-held business.
   C. **Correct.** A shelf registration is used to pre-register stock that is not to be sold at once.
   D. Incorrect. Regulation D does allow for stock issuances, but not in the form of a shelf registration.

5. A. Incorrect. Accredited investors are allowed to participate in Regulation D stock sales.
   B. **Correct.** A general solicitation is not allowed under Regulation D.
   C. Incorrect. Sales under Regulation D are commonly made through the contacts provided by investment bankers.
   D. Incorrect. The interim accumulation of funds in an escrow account is a common part of Regulation D stock sales.

Chapter 11
Credit Rating Agencies

Learning Objectives

- Identify one of the major agencies which control most of the credit rating market
- Recognize the meaning of a particular credit rating

Introduction

When a company is large enough to issue debt instruments into the marketplace, it usually must obtain a credit rating from a credit rating agency. In this chapter, we discuss why credit ratings are necessary, the major rating agencies, and the process used to obtain a credit rating.

The Credit Rating Environment

A credit rating agency is an entity that assigns credit ratings to either the issuers of certain kinds of debt, or directly to their debt instruments. Some of these agencies also offer credit rating advisory services, under which they advise clients regarding how to structure their debt issuances in order to achieve a particular credit rating. The larger agencies earn most of their income from fees levied against the issuers of debt instruments; this can result in a conflict of interest, since a debt issuer could possibly influence a rating decision by shopping among the rating agencies for the best rating.

There are several fee structures used by the rating agencies. The more common fees are as follows:

- One-time fee based on a percentage of the nominal value of the underlying transaction
- Recurring base fee

If a fee is based on a percentage of nominal value, it may be subject to a cap to avoid an excessive charge.

There are three major credit rating agencies that provide ratings for the bulk of all debt issuances. They are authorized for ratings work as Nationally Recognized Statistical Rating Organizations (NRSROs) by the Securities and Exchange Commission (SEC). Since there are only a few authorized rating agencies, the ratings industry is essentially a closed oligopoly, and so probably charges higher fees than would be the case in a more competitive environment. The three agencies that collectively control most of the market are:

- Moody's Investor Service
- Standard & Poor's
- Fitch Ratings

In addition, the following agencies are also authorized as NRSROs, but have much smaller market shares:

- Kroll Bond Rating Agency
- A. M. Best Company
- Dominion Bond Rating Service, Ltd.
- Japan Credit Rating Agency, Ltd.
- Egan-Jones Rating Company
- Morningstar, Inc.

The ratings issued by these agencies are used by investors to determine the price at which to buy debt (usually bonds). In addition, the investment policies of many entities require them to limit their

investments to debt issuances having certain minimum credit ratings. It is difficult to issue debt without a credit rating, since the issuance may be undersubscribed or can only be sold at a high effective interest rate.

The rating classifications used by the agencies vary from each other to some extent. The following table presents a comparison of the credit rating classifications of the three largest agencies. Debt issuances rated as investment grade in the table are considered suitable for investment purposes. The ratings classified as speculative are generally avoided by those entities looking for safe investments.

Credit Rating Comparison

Risk Level	Moody's	Standard & Poor's	Fitch
Investment grade:			
(highest investment grade)	Aaa	AAA	AAA
	Aa1	AA+	AA+
	Aa2	AA	AA
	Aa3	AA-	AA-
	A1	A+	A+
	A2	A	A
	A3	A-	A-
	Baa1	BBB+	BBB+
	Baa2	BBB	BBB
(lowest investment grade)	Baa3	BBB-	BBB-
Speculative grade:			
(highest speculative grade)	Ba1	BB+	BB+
	Ba2	BB	BB
	Ba3	BB-	BB-
	B1	B+	B+
	B2	B	B
	B3	B-	B-
	Caa1	CCC+	CCC+

Note: There are additional lower speculative grades than those listed in this table.

Only a large company with a stable business model and conservative financial practices can hope to qualify for one of the top-tier investment grades. Indeed, so few AAA ratings are issued that the recipients tend to use them as marketing tools to impress customers, suppliers, and employees. Since the AAA rating is well out of reach for most companies, the primary goal is simply to obtain a mid-level investment grade rating. By doing so, investors will not demand an excessively high interest rate on bond issuances. Companies certainly do not want their debt instruments to be classified as speculative, since investors will not buy them unless the company is willing to pay a very high interest rate.

A debt issuer may find that the credit rating agencies assign different credit ratings to different bond issuances, even though the bonds are all being issued by the same entity. This variation is caused by differences in the amount of collateral (if any) assigned to the debt, the level of subordination to other debt instruments of the issuer, and other debt terms.

The Rating Process

One should be aware of the process flow that results in a credit rating, particularly in regard to the amount of time required to complete the process. The key process steps are:

1. The agency assigns a primary analyst to the company, as well as a senior analyst specializing in the company's industry.

2. The agency issues a questionnaire to the company, asking for responses in a number of areas, as well as for the provision of financial information. The company may need a full week to prepare a complete response to the questionnaire. The types of information that the agency will want to see include:
    - Overview of the business and its objectives
    - Historical and forecasted financial information for the past five years and next five years, respectively
    - Key manager biographies
    - Market analysis
3. Representatives of the company and the agency meet to go over the requested information, as well as for the company's management team to make a presentation regarding the financial condition of the business and future plans. There will be an extensive question-and-answer session where the agency team attempts to gain insights into how the company operates.
4. The agency's ratings team spends several weeks reviewing the information and developing a detailed report, which is then critically reviewed by the agency's ratings committee. If the ratings committee wants additional information before reaching a decision, it can send the proposed rating package back for further review. The resultant rating will be based on a combination of the finances of the business, the market in which it competes, and its estimated future prospects.
5. The primary analyst presents the rating to the company's senior management team. If there is a rush to complete the process, this notification may be by phone.
6. The agency releases its rating to the major news services, possibly including a brief description of the reason(s) for the rating assignment.
7. The primary analyst continues to monitor the condition of the company, and may alter the assigned rating based on any number of financial, operational, and/or industry-related factors. If there is a rating change, the agency will release this information to the major news services.

The time required for an agency to issue a rating varies, because the development of a rating is an iterative process that requires input from both the issuer and the agency. The issuer must provide a significant amount of detailed information, and then respond to several additional requests from the agency. Thus, a fast rating requires the cooperation of both parties. If it is necessary to obtain a rating in short order, it is helpful if the CFO, treasurer, *and* controller can empty their calendars to the greatest extent possible, in order to deal with any information requirements. If both sides have adequate resources and are willing to make the effort, it should take between six and eight weeks to obtain a rating.

Tip: Given the amount of time required to obtain a rating, it can make sense to obtain the rating as early as possible, so that the treasurer can allocate more time to marketing the debt issuance and negotiating its terms.

If a company is a small one or issues debt relatively infrequently, it can make sense to obtain ratings from more than one agency. Though doing so is expensive, it shows that multiple entities have given their seal of approval to the financial condition of the business. Also, the cost is reduced somewhat for additional ratings, since the agencies base their analyses on approximately the same information, which the company only has to compile once. It is possible to obtain more than one rating during the same evaluation period.

If you elect to pursue multiple ratings, do not be surprised if the ratings awarded by each agency are not equivalent to each other. Each agency has its own rating system, and may give different weightings to a variety of company obligations, the quality and tenure of management, the consistency of earnings and cash flow, adherence to risk management principles, and the size of the business. However, these should not be significant differences that are many ratings apart.

If a company is not experienced with the rating process, it can make sense to hire the services of a ratings advisor, possibly from the company's investment banker. Though expensive, these advisors are experienced in every aspect of the rating review process, and so can assist with the production and presentation of information to the agencies.

Tip: The amount of effort required to obtain a rating is significant, so try to schedule it away from a quarterly review or annual audit of the financial statements. Otherwise, the treasury and accounting departments will be overloaded.

There may be cases where management disagrees with the rating assigned by a rating agency. If so, there is no formal appeal process, nor will an agency suppress its rating. The only scenario under which an agency will consider changing its opinion is when new information is made available that was not presented as part of the initial rating review.

If the management team wants to obtain an improved credit rating at some point in the future, it may need to reposition the financial structure of the business to make it more conservative. For example, shares in the business could be sold and the proceeds used to reduce the amount of debt outstanding. However, doing so may reduce the amount of cash available for other purposes, which can impact the company's growth plans.

Ratings agencies may alter a rating subsequent to its initial issuance. The treasurer can impact these rating changes to some extent by discussing with the primary analyst any major changes being contemplated to the finances or operations of the business. The feedback given by the analyst may convince the treasurer to alter the company's plans, thereby leading to a rating enhancement or at least the avoidance of a rating downgrade.

Chapter Summary

Credit ratings and the objectives of a business are intertwined. If senior management wants to achieve rapid growth, it may need to issue more debt than a rating agency might consider prudent, resulting in a lower credit rating. Conversely, if it is considered more important to maintain a high credit rating, doing so will mandate a level of fiscal prudence that cannot support a rapid rate of growth. In short, it is difficult to obtain both a high growth rate and a stratospheric credit rating—management has to choose which objective is more important.

Review Questions

1. Issuing debt without a credit rating may result in:
    A. Avoidance of attached warrants
    B. Issuance at a low effective interest rate
    C. An oversubscribed debt issuance
    D. An undersubscribed debt issuance

2. Obtaining more than one rating:
    A. Is needed when a company has recently emerged from bankruptcy
    B. Results in a somewhat reduced cost for additional ratings
    C. Is completely unnecessary
    D. Requires the use of a ratings advisor

Review Answers

1. A. Incorrect. An unrated debt issuance may require warrants to attract investor interest.
   B. Incorrect. An unrated debt issuance may result in a high effective interest rate.
   C. Incorrect. An unrated debt issuance is unlikely to be oversubscribed.
   D. **Correct.** A debt issuance may be undersubscribed, since investors will not buy without a credit rating by a valid third party rating agency.

2. A. Incorrect. Recent bankruptcy does not have a direct bearing on the number of ratings obtained.
   B. **Correct.** Obtaining more than one credit rating results in a somewhat reduced cost for additional ratings.
   C. Incorrect. Obtaining more than one rating is considered useful for a smaller or infrequent issuer of debt.
   D. Incorrect. A ratings advisor is not necessarily required to obtain multiple ratings.

Chapter 12
Clearing and Settlement Systems

Learning Objectives

- Identify the function of a correspondent bank
- Recognize the meaning of an "on-us" check
- Identify what the Fedwire system is
- Discern the intent of the Continuous Linked Settlement system

Introduction

From a cash management perspective, it is not critical to understand the exact details of how payments move through the various national and international payment settlement systems. Accordingly, we have provided in this chapter a more general overview of how the clearing and settlement process works, and noted a number of the more prominent systems. All countries operate their own domestic clearing and settlement systems, which follow the general operational patterns described below for the representative systems.

The Clearing and Settlement Process

Clearing is the recordation of transactions between the various members of a *clearing channel*. An example of a clearing channel is the Clearing House Interbank Payments System (as discussed later in this chapter). *Settlement* is achieved between the member's accounts located at the Federal Reserve Bank (Fed), or at the central or similar bank of any country operating a settlement system. Thus, clearing is the recordation phase of transferring funds, and settlement is the actual movement of funds between parties. There are many clearing and settlement systems, which are usually constructed at the national level.

For a clearing and settlement system to work, participating banks must have an account with the clearing and settlement entity. Settlement then occurs between these accounts. The banks move funds in and out of these accounts as necessary to fulfill their obligations through the settlement system. If a bank does not have an account with a settlement system, it must work through a correspondent bank (see the next section) that has such an account.

Conceptually, settlement is the process of shifting funds from the account of the payer to the account of the payee. Settlement can occur on a net basis or a gross basis. When settlement is on a *net basis*, all transactions between participating banks are tallied, and only the net difference between their total positions is transferred. When settlement is on a *gross basis*, the full amounts of funds required by a payment transaction are shifted between banks for each individual transaction. Net settlement is clearly more efficient in terms of the total amount of cash paid out, but takes more time to complete. As examples of these settlement systems, the Fedwire system is on a gross basis, and the Automated Clearing House (ACH) system operates on a net basis.

Banks have most of their liquidity tied up in loans and other investments, and so prefer to transfer away the minimum amount of cash as part of the settlement process. Thus, from a liquidity perspective, a net settlement system is the preferred approach for a bank. A gross settlement system could require the outbound transfer of a significant amount of cash, which may not immediately be offset by inbound cash transfers related to inbound payments, and which may therefore require a bank to liquidate some invested funds in order to fund the outbound transfer.

The risk of bank failure has differing impacts on gross and net settlement systems. In a gross system, settlement is immediate and simultaneous, so there is no risk of a bank failure interfering with a payment. However, settlement under a net system can require several business days, which introduces the risk of a bank failure interfering with payments. This is called *settlement risk*, or *Herstatt risk*, after a small German bank, Bankhaus Herstatt, which failed in June 1974. Herstatt accepted a payment of Deutsche

Marks in Frankfurt in exchange for a delivery of U.S. dollars in New York. Because of the time zone difference between the two cities, the counterparty banks incurred estimated losses of $620 million when regulators shut down the bank before the offsetting dollar payment was made in New York.

Because of this settlement risk, there is a tendency for high-value payments to be made through gross settlement systems, leaving lower-value payments to be made through net settlement systems. Some net settlement systems have been gradually reducing the time required to calculate net settlements, thereby reducing settlement risk for participating banks.

Correspondent Banks

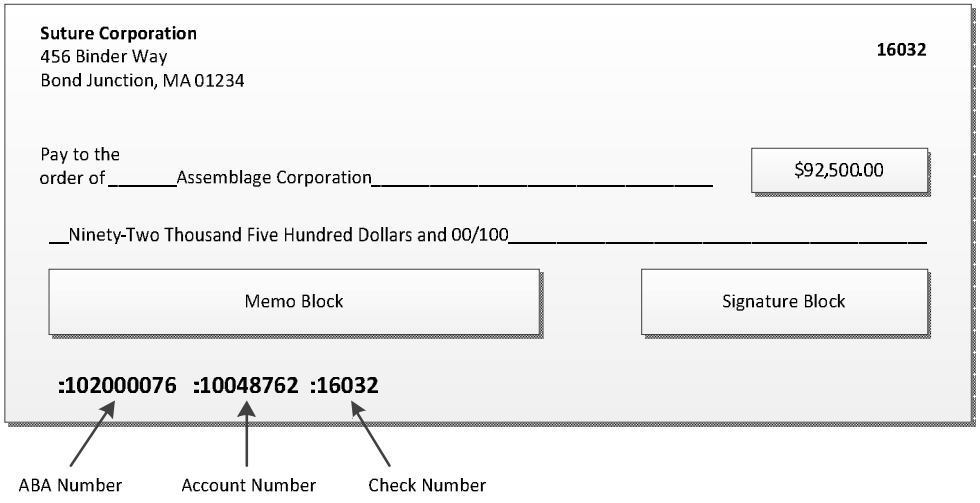
What if a bank is asked to handle a transaction that is located outside of its normal service area? The usual solution is to enter into a relationship with a bank authorized to do business in the required area, which is called a *correspondent bank*. A correspondent bank acts as an agent, handling transactions, accumulating documents for forwarding, accepting deposits, and so forth. The correspondent bank concept is especially important for transactions taking place in foreign countries. Some of the larger banks have thousands of these correspondent banking relationships, which allows them to handle any banking transaction, anywhere in the world through a correspondent bank, without having to incur the expense of opening up their own branch offices in distant locations.

Check Clearing

When a company issues a check payment, the payee deposits the check with its own bank. The payee's bank collects information from each check by scanning the bottom line of information on the check. This information is encoded using magnetic ink character recognition (MICR), which makes it easier to extract information from the check with a check scanner. The MICR line contains the routing information needed to route the check back to the payer's bank for reimbursement. The following information is encoded on the MICR line:

- **ABA number.** Contains the identification number of the bank on which the check was drawn. Also known as a transit routing number, or TRN. "ABA" is an acronym for American Bankers Association.
- **Account number.** Contains the number of the account assigned to the payer by the bank.
- **Check number.** States the number of the check, which is also shown in the upper right corner of the check.
- **Payment amount (optional).** States the payment amount listed on the check. This code can be created by the payer when the check is printed, or by the payee when preparing the check for deposit. Most commonly, it is added by the bank at which the check is deposited.

A sample of the MICR information encoded on a check is shown in the following exhibit.



The payment amount stated on a check does not immediately appear in the payee's bank account, since the payee's bank has not yet received the funds from the payer's bank. Instead, the payee's bank makes a notation of the amount in the payee's account, and sets a date by which the funds will be available for use by the payee (known as the *value date*). A bank sets value dates based on its own availability schedule, which states the number of business days required before the cash stated on various types of checks will be made available to payees. Availability dates should approximately follow these timelines:

- **Zero-day delay.** *On-us* checks, which are checks deposited in the same bank on which they were drawn. U.S. Treasury checks should also be assigned a zero-day delay.
- **One-day delay.** Checks drawn on local banks or on banks located in major cities.
- **Two-day delay.** Checks drawn on more distant locations.

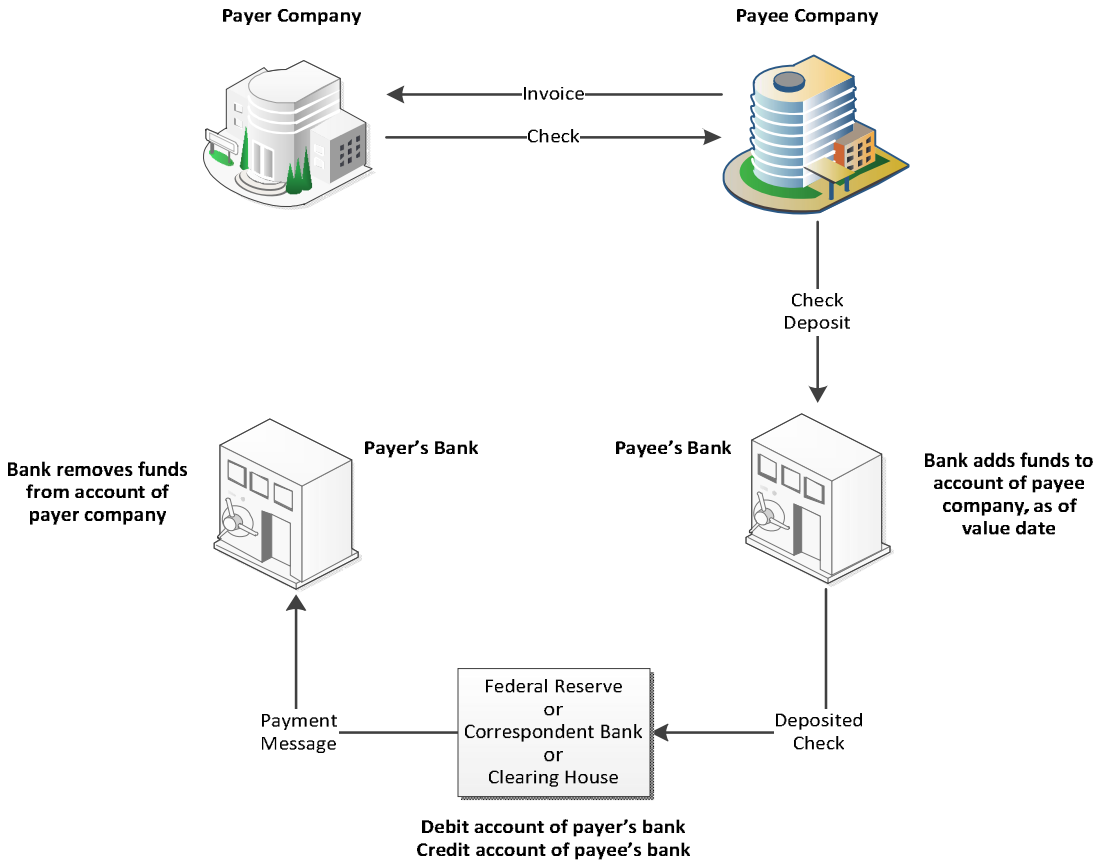
The payee's bank then has a choice of four possible methods for clearing the check, which are:

- **Clearinghouse.** Send the check to a check clearinghouse that aggregates and nets check payments forwarded from multiple banks.
- **Direct send.** Forward the check directly to the payer's bank.
- **Federal Reserve.** Send the check to the Fed's clearing service.
- **On-us processing.** Process the payment internally, if the check was drawn on an account with the same bank.

If the check is moving between banks, then ultimately the Fed will remove cash from the account of the payer bank with a debit, and deposit the cash in the account of the payee bank with a credit.

The following exhibit shows the process flow for clearing a check, assuming that the payment is drawn on a different bank from the payee's bank.

Check Clearing Process Flow



Foreign Check Clearing

There are inevitable delays in the settlement of currencies, for every currency must be settled in its country of origin. Thus, if a check is paid out of the account of a bank that is not part of the U.S. payment system, the check is sent back to the payer's bank for collection. The payer's bank pays an in-country correspondent bank, which in turn remits the funds by electronic transfer to the payee's bank. This settlement process is very time-consuming and expensive, and may mean that the check recipient will not have access to the cash amount stated on the check for weeks.

There are countries in which there is heavy usage of a particular foreign currency—usually the U.S. dollar. In these cases, there are systems in place to clear locally drawn checks within those countries, using a local commercial settlement bank. For example, U.S. dollar clearing is available in Tokyo, Hong Kong, and the Philippines. These local settlement systems create a credit risk for the participants in a check clearing transaction, because the local settlement bank could fail while checks are being cleared, leaving liabilities outstanding between the payer and payee.

Tip: A few banks offer immediate availability of the cash noted on a check that originates in another country, though at a discount to the face value of the check. Cash availability will be based on the size of the payment, the currency in which it is denominated, and how important the payee is to its bank. If the payee's bank cannot collect from the payer's bank, the payee will be liable to its bank for repayment.

The Automated Clearing House System (ACH)

The Automated Clearing House System is much better known as ACH. The system is designed for high-volume, low-value payments, and charges fees low enough to encourage the transfer of low-value payments. The system is designed to accept payment batches, so that large numbers of scheduled payments can be made at once. Given its convenience and reliability, the ACH system has replaced check payments to a considerable extent.

The ACH system is designed for the domestic transfer of payments. It does not operate in other countries, though variations on the system have been installed in many countries. Some major banks operate portals that link a number of these ACH-like systems, so that a "global" system with ACH characteristics is currently operational. See the Types of Payments chapter for more information.

ACH is a net settlement system, so settlement is delayed for up to two days, and there is some settlement risk. The system allows for the transfer of a limited amount of additional information along with payment instructions, though this information may be stripped away if a transaction is being transferred into a different national ACH system that does not allow for additional payment information.

A rare clearing and settlement feature is the ability of the ACH system to process debit transactions, so that a payee can initiate a payment by having cash extracted from the account of the payer. This is a particularly useful feature for recurring payments. Debit transactions can be refused, and many companies have instituted ACH debit blocks on their bank accounts to restrict the use of this feature.

ACH is primarily used to process payments from businesses to individuals. For example, ACH is used for payroll direct deposit payments, as well as for pension and annuity payments. In the reverse direction, businesses use ACH debits to extract a variety of payments from the bank accounts of individuals. There is also increasing usage of ACH for accounts payable payments from one business to another.

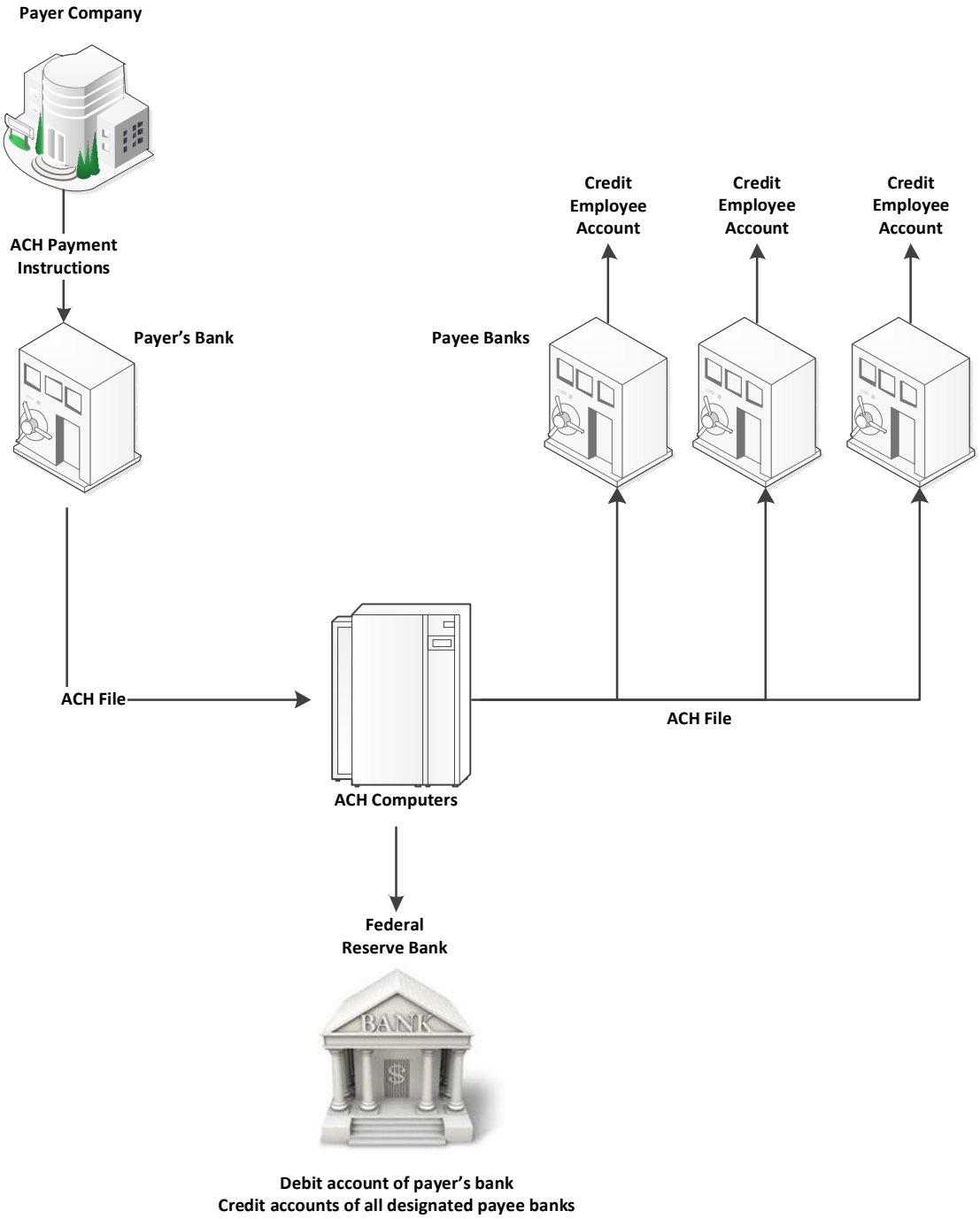
The basic process flow for the ACH system is as follows:

1. The payer submits a file to its bank, containing a batch of payment information.
2. The bank immediately pays any amounts directed to payee accounts within the bank, using an internal book transfer.
3. The bank assembles all remaining payments into a batch and sends it to the regional ACH operator to which it has been assigned.
4. The ACH operator nets the payment information submitted by the banks in its region and notifies them of the settlement amounts for which they are responsible.
5. The ACH operator summarizes the remaining transactions involving payments to banks located outside of its processing region, and sends the summaries to the other regional ACH operators for further settlement, which are completed on a gross basis.

6. When payments arrive in the accounts of payee banks, those banks forward the payments to payees, while the payers' banks debit the payers' accounts for the related and offsetting payment amounts.

The following exhibit shows the process flow when several payroll payments to employees are made using the ACH system (and employing a *very* simplified view of ACH processing).

ACH Process Flow



CHIPS

The Clearing House Interbank Payment System (CHIPS) is primarily used to settle foreign exchange transactions, move funds between banks, and make Eurodollar and letter of credit payments. The system handles nearly all interbank transfers involving international dollar payments. CHIPS is an end-of-day net settlement system, where system participants send and receive Fedwire transfers through a settlement account at the Fed. End-of-day settlement represents a reduced level of settlement risk. Once funds have been shifted to the payee in CHIPS, they cannot be recalled by the payer.

The basic process flow for the CHIPS system is as follows:

1. The payer sends payment instructions to its bank.
2. The bank forwards payment instructions to CHIPS, which aggregates these instructions from all submitting banks at the end of the day.
3. CHIPS nets all payment instructions and sends the results to the Fed.
4. The Fed debits the accounts of payer banks and credits the accounts of payee banks, as per the CHIPS instructions.
5. CHIPS sends payment instructions to the payee's bank, so that the bank can credit the account of the payee.

The CHIPS system is particularly frugal in using a bank's liquidity, since only net settlement amounts are transferred between banks.

An advantage of CHIPS is that it allows participants to attach a large block of remittance information along with their payments. The main downside to using CHIPS is that its transaction fee is higher than that of the ACH system.

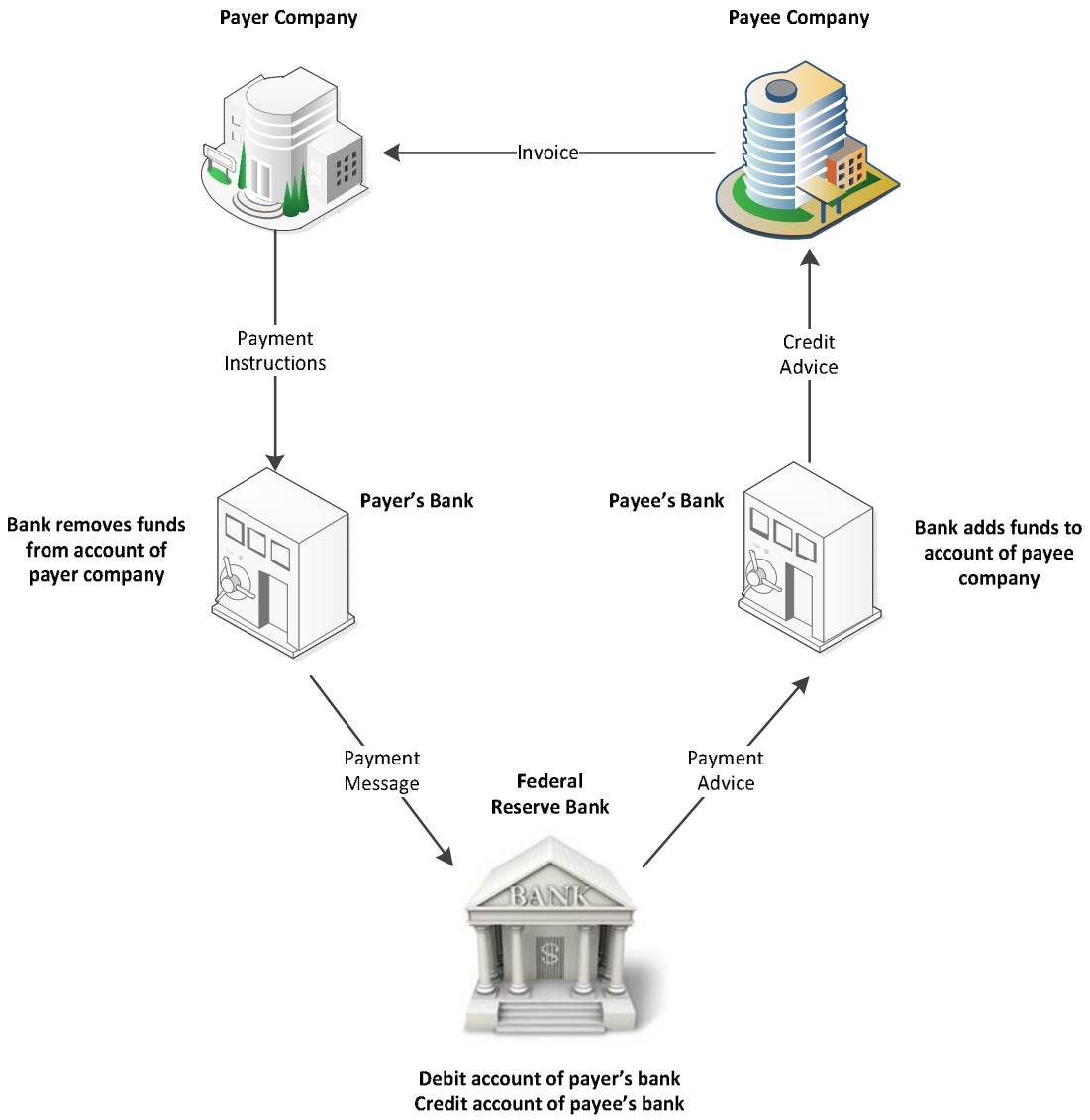
CHIPS is operated by the New York Automated Clearing House, which in turn is owned by a group of banks. Membership in CHIPS is quite small, so access to the system is typically through a correspondent relationship with one of the member banks.

Fedwire

The Fedwire system is operated by the Federal Reserve System in the United States. Fedwire is a same-day gross settlement system. The system settles payments with a simultaneous same-day credit to the account of the payee's bank and a debit to the account of the payer's bank. The Fed guarantees all payments made through the Fedwire system. The Fedwire system is primarily used for high-value payments, partially because the per-transaction fee is quite high, and so is cost-prohibitive for smaller payments. Also, once funds have been shifted to the payee and confirmed by the Fed, they cannot be recalled without the permission of the payee.

The following exhibit shows the process flow when a payment is made using the Fedwire system.

Fedwire Process Flow



The basic process flow with the Fedwire system is for a company to send payment instructions to its bank, which removes the funds from the company's account and sends the payment instructions to the Fed. The Fed transfers the cash from the Fed account of the payer's bank to the Fed account of the payee's bank. The payee's bank then credits the bank account of the payee.

CHAPS

The clearing and settlement system for pound-denominated payments is the Clearing House Automated Payments System (CHAPS), which is operated by the CHAPS Clearing Company. This is a gross settlement system, which therefore offers same-day settlement. The system is owned and operated by a small number of member banks, with hundreds of other banks participating in the system.

CHAPS charges a high transaction fee, so its use is generally limited to high-value payments. The system is used for money transfers between banks, as well as businesses making high-value payments to their suppliers. Also, the system is used by attorneys on behalf of persons buying houses.

TARGET2

The Trans European Automated Real Time Gross Express Transfer System (TARGET2) is a real-time gross settlement system, which replaced the original TARGET system in 2007. TARGET2 connects the various real-time gross settlement systems in the Euro area. The system is designed to increase the efficiency of cross-border payments denominated in euros. Since it is used for all payments involving the Eurosystem (the monetary authority of the euro zone), it is one of the largest payment systems in the world, with more than 10,000 participating financial institutions.

All payments made through TARGET2 are final, and so cannot be reversed.

Continuous Linked Settlement

Continuous Linked Settlement (CLS) is a real-time net settlement system used by many international banks to settle foreign exchange transactions amongst themselves, and on behalf of their clients. The system is operated by CLS Bank, and currently handles transactions denominated in the currencies of 17 countries, which are:

Australian dollar	Israeli shekel	Singapore dollar
British pound	Japanese yen	South African rand
Canadian dollar	Korean won	Swedish krona
Danish krone	Mexican peso	Swiss franc
Euro	New Zealand dollar	United States dollar
Hong Kong dollar	Norwegian krone	

The CLS system is designed to ensure that foreign currency payments and receipts are completed simultaneously, thereby avoiding settlement risk. CLS stands between the participating banks as the common counterparty. The system process flow is as follows:

1. Participating banks send their foreign exchange information to CLS until the daily cutoff time.
2. CLS aggregates the submitted information into a schedule of payments due to CLS from each bank, which it sends to the banks.
3. The participating banks submit the required amount of funds to CLS, which are credited to their CLS accounts. These accounts are set up with sub-accounts for each currency.
4. CLS settles payments with debits and credits to the CLS sub-accounts of the participants.
5. If a participating bank has not submitted sufficient funds to support all settlements, CLS post-pones processing the related payment transactions until it receives the required funds. This means that CLS processes settlements using a direct link between both sides of a specific foreign exchange transaction (known as a *payment-versus-payment* procedure). Thus, if a participating bank needs to submit more funds, the related credit to the other side of the payment is not com-pleted until such time as the required funds are sent to CLS.

All CLS processing is concluded within a five-hour time period that encompasses the business hours of the national settlement systems with which it is linked.

The CLS system is highly efficient for participants, since banks pay into it only the net obligation in each currency required for the hundreds or thousands of currency transactions that they handle each day, rather than the total amount of each trade being processed. This netting efficiency is typically in the vicinity of 95%, so that the participating banks only have to pay in roughly 5% of the aggregate transaction total. The system is made more efficient by allowing a debit balance in a sub-account for a certain currency for a bank participant, as long as the aggregate balance in all of the participant's sub-accounts still sums to a credit balance.

The system is managed by CLS Group Holdings, and has a number of member banks, each of which holds multi-currency accounts with CLS Bank. Based on transaction volume, CLS appears to be the market leader for the settlement of foreign exchange transactions.

SWIFT

SWIFT is an acronym for the Society for Worldwide Interbank Financial Telecommunications. SWIFT is a global system for transmitting financial information, using an array of specifically-formatted electronic messages. The system was originally restricted to messaging between financial institutions, but has since been modified to allow businesses to originate messages that are then routed through bank intermediaries. SWIFT is *not* a clearing and settlement system.

There are electronic links between SWIFT and the clearing and settlement systems in many countries, which allows a bank to use SWIFT to initiate financial transactions in most parts of the world. Given the costs to set up SWIFT, it has traditionally only been used by banks, which process a sufficient volume of transactions to justify the cost. This means that corporations have routed their SWIFT transactions through banks. However, larger corporations with massive transaction volumes have found it cost-effective to become participants in the SWIFT system, and so have direct links into the system.

The primary categories of SWIFT messages that can be used are noted in the following table, with a large number of more specific messages available within each message series:

SWIFT Message Types

Message Series	Description
MT000	System messages
MT100	Customer payments and checks
MT200	Financial institution transfers
MT300	Treasury markets
MT400	Collection and cash letters
MT500	Securities markets
MT600	Treasury markets – Metals and syndications
MT700	Documentary credits and guarantees
MT800	Traveler's checks
MT900	Cash management and customer status

Examples of SWIFT messages related to cash management are the bank transfer to its own account (MT200), interbank payment (MT202), advice to receive (MT210), foreign exchange confirmation (MT300), and loan confirmation (MT320).

These messages are highly regimented, containing a closely-defined set of fields unique to each transaction type. The following table shows the fields comprising an MT300 foreign exchange confirmation. The intent is to note the extreme level of detail required to ensure that each SWIFT message is properly executed as intended by the parties to a transaction.

MT300 Foreign Exchange Confirmation Fields

Field	Field Name and Comment
20	**Sender's reference.** A unique identifier assigned by the sender to unambiguously identify the message.
21	**Related reference.** Contains the identification of the message to which the current message is related.
22C	**Common reference.** A unique value containing portions of the sender and receiver codes, plus the last digits of the exchange rate.
22A	**Type of operation.** Specifies the function of the message, such as a new transaction, a cancellation, or an amendment.
94A	**Scope of operation.** Specifies the roles of the sender and receiver.
17T	**Block trade indicator.** Specifies whether the deal is a block trade.
17U	**Split settlement indicator.** Specifies whether the amount is to be settled as a whole or in several parts, and indicates relevant account names, account numbers, routing codes, and bank names.
82A	**Party A.** Identifies the client.

Field	Field Name and Comment
83A	**Account number.** Specifies the funds or beneficiary customer.
87A	**Party B.** Identifies Party B.
33B	**Currency, amount.** Specifies the currency type and the amount sold by Party A.
32B	**Currency, amount.** Specifies the currency type and amount bought by Party A.
53A	**Delivery agent.** Identifies the financial institution from which the payer will transfer the purchased amount.
57A	**Receiving agent.** Identifies the financial institution and account where the payee will receive the purchased amount.
58A	**Beneficiary institution.** Specifies the institution to which the payment is to be made.
36	**Exchange rate.** Specifies the exchange rate of the transaction.
30T	**Trade date.** Notes the date on which the parties agreed to the transaction.
30V	**Value date.** Specifies the value date of the transaction.
56A	**Intermediary.** Notes the intermediary institution for the transfer of funds.
72	**Sender to receiver information.** States the time and venue at which the transaction was concluded.

Tip: Be sure to completely fill out a SWIFT message form. Otherwise, the automated processing system of the bank handling the transaction will shunt the message into a manual processing queue. Manual processing can delay a transaction, and one or both of the parties to the transaction may also be charged by the bank for the additional processing labor.

Chapter Summary

From a corporate cash management perspective, the key issue involving clearing and settlement systems is the amount of time required for a payment to transit the relevant system. This time period can be brief, if a gross settlement system is used, or can take an inordinate amount of time, if a check payment is made across international borders. This information can be useful for cash forecasting purposes.

Another issue with clearing and settlement systems is the fee charged by one's bank for the type of settlement system used. For example, the fees required for an ACH payment are minimal, while a wire transfer can be inordinately expensive. Consequently, it is useful to understand how the fees associated with a clearing and settlement system will be passed through to the payer, and sometimes also to the payee.

Review Questions

1. A net settlement system involves:
    A. Transferring the full amount of funds required by a payment transaction
    B. The use of the Fedwire system
    C. Transferring only the net difference between the transactions of participating banks
    D. The transfer of bills and coins only

2. Herstatt risk describes:
    A. An excessively long mail float
    B. The risks inherent in a gross settlement system
    C. The risk of a counterparty failure
    D. A risk most common in net settlement systems that settle very quickly

3. The MICR information on a check does *not* include:
    A. ABA number
    B. Account number
    C. Check number
    D. Payee name

4. The CHIPS system is primarily used to:
    A. Make gross settlement payments
    B. Move funds between banks
    C. Make direct deposit payments
    D. Issue payments without accompanying remittance information

5. The TARGET2 system:
    A. Is a real-time gross settlement system
    B. Is a same-day net settlement system
    C. Connects the settlement systems in the United States and Canada
    D. Is one of the smaller settlement systems

Review Answers

1. A. Incorrect. A gross settlement system transfers the full amount of funds required by a payment transaction.
   B. Incorrect. The Fedwire system is a gross settlement system.
   C. **Correct.** Transferring only the net difference between the transactions of participating banks is a net settlement system.
   D. Incorrect. Bills and coins are not used in a settlement system.

2. A. Incorrect. Herstatt risk is not related to the possibility of having an excessively long mail float.
   B. Incorrect. Herstatt risk appears in a net settlement system.
   C. **Correct.** Herstatt risk describes the risk of a counterparty failure.
   D. Incorrect. Herstatt is more likely to arise in systems with long settlement periods.

3. A. Incorrect. The ABA number is included in the MICR information on a check.
   B. Incorrect. The account number is included in the MICR information on a check.
   C. Incorrect. The check number is included in the MICR information on a check.
   D. **Correct.** The payee name is not included in the MICR information on a check.

4. A. Incorrect. CHIPS is a net settlement system.
   B. **Correct.** The CHIPS system is primarily used to move funds between banks.
   C. Incorrect. Direct deposit is not a primary use of CHIPS.
   D. Incorrect. CHIPS payments include remittance information.

5. A. **Correct.** TARGET2 is a real-time gross settlement system.
   B. Incorrect. TARGET2 is not a net settlement system.
   C. Incorrect. TARGET2 connects gross settlement systems in the Euro area.
   D. Incorrect. TARGET2 is one of the largest payment systems in the world.

Chapter 13
Foreign Exchange

Learning Objectives

- Determine the basis of transaction exposure
- Identify an example of operational hedge
- Recognize what a forward contract can be used for
- Ascertain when payment netting is used

Introduction

It is relatively simple to buy and sell foreign exchange for ongoing business activities, and we dispatch that subject early in this chapter. Our primary topic of discussion is how to create a predictable stream of cash flows, despite the unpredictability associated with foreign exchange transactions. Predictability is of considerable importance, for a sudden loss of cash could trigger a series of unexpected actions, such as a delay in capital investments, the imposition of additional debt, or the sale of stock to new investors. To make cash flows more predictable, this chapter addresses the inherent variability of foreign exchange transactions, and how to mitigate them with a number of strategic and tactical initiatives.

Buying and Selling Currencies

If a company deals with a trading partner located in another country, it is entirely likely that the company will either have to pay the trading partner in its own currency, or accept such payment from the trading partner. In either case, it is necessary to understand how foreign currencies are bought and sold, which we will address in this section.

When a business wants to obtain a foreign currency, it buys at the *spot price*, which is the price at which the currency is currently available in the company's home currency. The quote is stated as a *currency pair*, where there is a *base currency* and a *quote currency*. The base currency is the first currency stated in a foreign exchange quote, while the quoted currency is the second currency stated. For example, if someone holding U.S. dollars wants to buy British pounds, the currency pairing is stated as:

US $1 = £0.6463

In the currency pairing, one U.S. dollar (the base currency) will purchase 0.6463 British pounds (the quote currency). If the pairing was reversed, it would be stated as:

GBP £1 = US $1.5474

In the second currency pairing, one British pound (the base currency) will purchase 1.5474 U.S. dollars (the quote currency).

The currency pairing information can be used to determine the amount of a payment to issue to a counterparty. For example, a U.S. business has incurred an obligation to pay $100,000 to a British supplier, denominated in pounds. At the exchange rate of US $1 = £0.6463 noted above, the company must pay £64,630 to the supplier (calculated as $100,000 × 0.6463).

Also, note that currency spot rates are quoted to four decimal places for most currencies, though a currency that represents a small unit of value is only quoted to two decimal places. For example, a spot rate quote for the Japanese yen is made to two decimal places. A *point* is a one-digit change in the fourth decimal place of the quoted price of a currency.

NOTE: The British pound and U.S. dollar currency pairing is sometimes described as *the cable*. The term is derived from the transatlantic cable over which currency prices were originally transmitted between the London and New York exchanges.

In most cases, international trade is invoiced in U.S. dollars, so the typical currency pairing configuration is for the U.S. dollar to be the base currency, with the other currency stated as the quote currency. If an exchange rate is between two currencies, neither of which is the U.S. dollar, the rate is known as a *cross-rate*. An example of an active cross-rate market is between the euro and the Japanese yen.

Major currency pairings are continually quoted through many banks and foreign exchange services. Other pairings are less frequently quoted, which may result in less competitive quotes.

Tip: When buying and selling currencies, obtain quotes from several banks. It is quite possible that a bank offering the best deal on one currency will not offer the best deal on another currency.

A quote for a currency can be either a bid price or an ask price. A *bid price* is the price at which a foreign currency dealer will agree to acquire a currency. The *ask price* is the price at which a dealer is willing to sell a currency. The difference between the bid and ask prices is called the *spread*, and is the profit earned by the dealer on its purchases and sales of various currencies.

The dates to be aware of for a foreign exchange transaction are the *spot date* and *the deal date*. The deal date is the date on which the business enters into a foreign exchange transaction. The spot date is two business days after the deal date. If there is a holiday or weekend between the deal date and spot date, the spot date is delayed by the number of days in the holiday or weekend. For example, a deal date of Monday will result in a spot date of Wednesday, while a deal date of Friday will result in a spot date of the next Tuesday, and so forth. This two-day delay is needed by the banks to validate and account for each transaction, as well as to ensure that the currencies being bought and sold are remitted to the applicable counterparties.

A company will typically arrange for currency conversions and hedges through a bank. If so, the bank may require that the company set up a foreign exchange credit facility with it, which is similar to a line of credit. This credit facility is used to fund a variety of foreign exchange transactions. If the bank suspects that a company may present a credit risk, the bank may require collateral on the credit facility. The use of collateral can be a problem if a company has already pledged its assets as collateral for loans with other lenders.

Types of Foreign Exchange Risk

There are several types of foreign exchange risks that can impact a company, and which are described below.

A company may incur *transaction exposure*, which is derived from changes in foreign exchange rates between the dates when a transaction is booked and when it is settled. For example, a company in the United States may sell goods to a company in the United Kingdom, to be paid in pounds having a value at the booking date of $100,000. Later, when the customer pays the company, the exchange rate has changed, resulting in a payment in pounds that translates to a $95,000 sale. Thus, the foreign exchange rate change related to a transaction has created a $5,000 loss for the seller. The following table shows the impact of transaction exposure on different scenarios.

Risk When Transactions Denominated in Foreign Currency

	Import Goods	Export Goods
Home currency weakens	Loss	Gain
Home currency strengthens	Gain	Loss

When a company has foreign subsidiaries, it denominates the recorded amount of their assets and liabilities in the currency of the country in which the subsidiaries generate and expend cash. This *functional currency* is typically the local currency of the country in which a subsidiary operates. When the company reports its consolidated results, it converts these valuations to the home currency of the parent company, which may suffer a loss if exchange rates have declined from the last time when the financial statements were consolidated. This type of risk is known as *translation exposure*.

EXAMPLE

Suture Corporation has a subsidiary located in England, which has its net assets denominated in pounds. The home currency of Suture is U.S. dollars. At year-end, when the parent company consolidates the financial statements of its subsidiaries, the U.S. dollar has depreciated in comparison to the pound, resulting in a decline in the value of the subsidiary's net assets.

The following table shows the impact of translation exposure on different scenarios.

Risk When Net Assets Denominated in Foreign Currency

	Assets	Liabilities
Home currency weakens	Gain	Loss
Home currency strengthens	Loss	Gain

There are also several types of economic risk related to the specific country within which a company chooses to do business. These risks include:

- **Political risk** is based on the actions of a foreign government that can impact a company, such as the expropriation of assets. Political risk can also encompass the violence that may accompany a change in government. There can be a significant risk of expropriation when a company has a large asset base within a country.
- **Convertibility risk** is the inability to convert a local currency into a foreign currency, because of a shortage of hard currencies. This tends to be a short-term problem.
- **Transfer risk** is the inability to transfer funds across a national border, due to local-country regulatory restrictions on the movement of hard currencies out of the country. Thus, a company may find that a local subsidiary is extremely profitable, but the parent company cannot extract the profits from the country.

Country-specific risks call for strategic-level decisions in the executive suite, not the treasury department. The senior management team must decide if it is willing to accept the risks of expropriation or of not being able to extract cash from a country. If not, the risk is eliminated by refusing to do business within the country.

Please note that the *type* of risk has a considerable impact on the time period over which a company is at risk. For example, transactional risk spans a relatively short period, from the signing date of the contract that initiates a sale, until the final payment date. The total interval may be only one or two months. However, translation risk and the various types of economic risks can extend over many years. There tends to be an inordinate focus in many treasury departments on the short-term transactional risk, when more emphasis should be placed on hedging against these other risks that can result in substantial losses over the long term.

Risk Management Alternatives

As noted in the last section, a company is at risk of incurring a loss due to fluctuations in any exchange rates that it must buy or sell as part of its business transactions. What can be done? Valid steps can range from no action at all to the active use of several types of hedges. In this section, we address the multitude of options available to the treasurer to mitigate foreign exchange-related risks. As you peruse these

options, keep in mind that the most sophisticated response is not necessarily the best response. In many cases, the circumstances may make it quite acceptable to take on some degree of risk, rather than engaging in a hedging strategy that is not only expensive, but also difficult to understand.

Take No Action

There are many situations where a company rarely engages in transactions that involve foreign exchange, and so does not want to spend time investigating how to reduce risk. There are other situations where the amounts of foreign exchange involved are so small that the risk level is immaterial. In either case, a company will be tempted to take no action, which may be a reasonable course of action. The question to consider is, at what level of foreign exchange activity should a business begin to consider risk management alternatives?

The question cannot be answered without having an understanding of a company's *risk capacity*. Risk capacity is the maximum amount of a loss that a business can sustain before a financial crisis is triggered. The following are examples of maximum losses:

- A loss that would require the tapping of all remaining borrowing capacity
- A loss that would breach one or more debt covenants
- A loss that would reduce capital levels below those mandated by regulatory authorities

The preceding examples provide hard quantitative numbers for a firm's total risk capacity, all of which threaten the company's existence. This does not mean that management should routinely expose a business to threat levels that could destroy it. Instead, it is necessary to arrive at a much less quantitative number, which is the maximum risk tolerance that management is willing to operate under on an ongoing basis before it will take steps to reduce risk. The risk tolerance figure is likely to be far lower than total risk capacity—perhaps just 5% or 10% of a firm's risk capacity. The exact amount of risk tolerance will depend upon the willingness of managers to accept risk. A more entrepreneurially inclined group may be willing to bet the company on risky situations, while professional managers will probably begin managing risk at lower tolerance levels.

Avoid Risk

A company can avoid some types of risk by altering its strategy to completely sidestep the risk. Complete avoidance of a specific product, geographic region, or business line is an entirely reasonable alternative under the following circumstances:

- The potential loss from a risk condition is very high
- The probability of loss from a risk condition is very high
- It is difficult to develop a hedge against a risk
- The offsetting potential for profit does not offset the risk that will be incurred

For example, a company located in the United States buys the bulk of its supplies in China, and is required under its purchasing contracts to pay suppliers in yuan. If the company does not want to undertake the risk of exchange rate fluctuations in the yuan, it can consider altering its supply chain, so that it purchases within its home country, rather than in China. This alignment of sales and purchases within the same country to avoid foreign currency transactions is known as an *operational hedge*.

As another example, a company wants to sell products into a market where the government has just imposed severe restrictions on the cross-border transfer of funds out of the country. The government also has a history of nationalizing industries that had been privately-owned. Under these circumstances, it makes little sense for the company to sell into the new market if it cannot extract its profits, and if its assets in the country are subject to expropriation.

Shift Risk

When a company is either required to pay or receive payment in a foreign currency, it is taking on the risk associated with changes in the foreign currency exchange rate. This risk can be completely eliminated by requiring customers to pay in the company's home currency, or suppliers to accept payment in the company's home currency. This is a valid option when the company is a large one that can force this

system of payment onto its suppliers, or when it sells a unique product that forces customers to accept the company's terms.

Tip: Never give customers a choice of currency in which to pay the company, since they will likely pay with their home currency, leaving the company to bear the risk of exchange rate changes.

Another possibility is to charge business partners for any changes in the exchange rate between the date of order placement and the shipment date. This is an extremely difficult business practice to enforce, for the following reasons:

- **Continual rebillings.** There will always be some degree of variation in exchange rates between the order date and shipment date, so it is probable that a company would have to issue an invoice related to exchange rate adjustments for every order, or at least include a line item for the change in every invoice.
- **Two-way rebillings.** If a company is going to insist on billing for its exchange rate losses, it is only fair that it pay back its business partners when exchange rates shift in its favor.
- **Purchase order limitations.** Customers routinely place orders using a purchase order that only authorizes a certain spending level. If the company later issues an incremental billing that exceeds the total amount authorized for a purchase, the customer will probably not pay the company.

To mitigate these issues, billing a business partner for a change in exchange rates should only be enacted if the change is sufficiently large to breach a contractually-agreed minimum level. The minimum level should be set so that this additional billing is a rare event.

EXAMPLE

An outsourcing company enters into long-term services contracts with its customers, and so is at considerable foreign exchange risk. It offers customers a fixed price contract within a 5% currency trading band, outside of which customers share the risk with the company. If the company gains from a currency shift outside of the trading band, it discounts the contract price.

The conditions under which currency risk can be shifted elsewhere are not common ones. Most companies will find that if they insist on only dealing in their home currencies, such behavior will either annoy suppliers or drive away customers. Thus, we will continue with other risk management actions that will be more palatable to a company's business partners.

Time Compression

Large variations in exchange rates are more likely to occur over longer periods of time than over shorter periods of time. Thus, it may be possible to reduce the risk of exchange rate fluctuations by reducing the contractually-mandated payment period. For example, 30 day payment terms could be compressed to 10 or 15 days. However, delays in shipping, customs inspections, and resistance from business partners can make it difficult to achieve a compressed payment schedule. Also, a customer being asked to accept a shorter payment schedule may attempt to push back with lower prices or other benefits, which increases the cost of this option.

The time compression concept can take the form of a company policy that does not allow standard credit terms to foreign customers that exceed a certain number of days. By doing so, a company can at least minimize the number of days during which exchange rates can fluctuate.

Payment Leading and Lagging

If there is a pronounced trend in exchange rates over the short term, the accounts payable manager can be encouraged to alter the timing normally associated with payables payments to take advantage of expected changes in exchange rates. For example, if a foreign currency is becoming more expensive, it may make sense to pay those payables denominated in it as soon as possible, rather than waiting until the normal payment date to pay in a more expensive currency. Similarly, if a foreign currency is declining in value,

there may be an opportunity to delay payments by a few days to take advantage of the ongoing decline in the exchange rate. The latter case may be too much trouble, since suppliers do not appreciate late payments.

Build Reserves

If company management believes that there is just as great a risk of a gain as a loss on a currency fluctuation, it may be willing to accept the downside risk in hopes of attaining an upside profit. If so, it is possible to build cash and debt reserves greater than what would normally be needed, against the possibility of an outsized loss. This may entail investing a large amount of cash in very liquid investments, or retaining extra cash that might otherwise be paid out in dividends or used for capital expenditures. Other options are to obtain an unusually large line of credit that can be called upon in the event of a loss, or selling more stock than would typically be needed for operational purposes.

Building reserves will protect a business from foreign exchange risk, but the cost of acquiring and maintaining those reserves is substantial. Cash that is kept on hand could have earned an investment, while a commitment fee must be paid for a line of credit, even if the line is never used. Similarly, investors who buy a company's stock expect to earn a return. Thus, there is a noticeable cost associated with building reserves. A less-expensive option is hedging, which we will address in the next section.

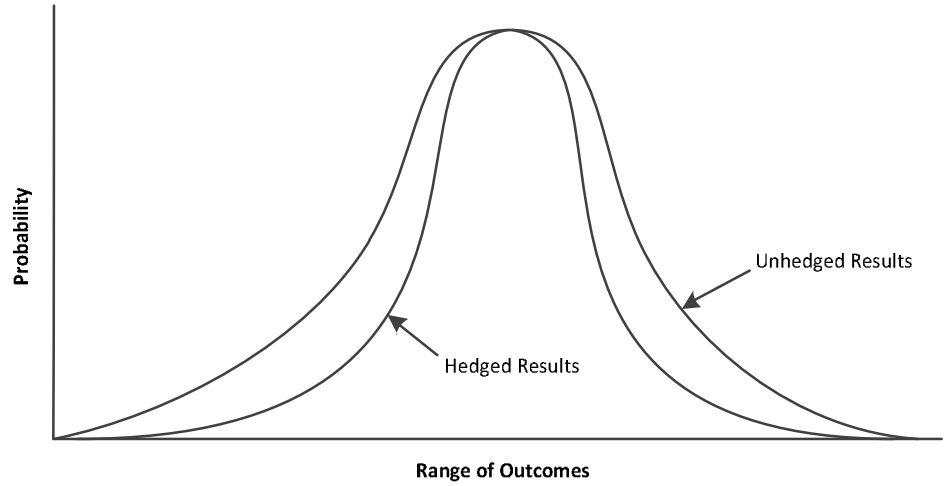
Maintain Local Reserves

If the company is routinely engaging in the purchase and sale of goods and services within another country, the answer may be to maintain a cash reserve within that country, which is denominated in the local currency. Doing so eliminates the cost of repeatedly buying and selling currencies and paying the related conversion commissions. The downside of maintaining local reserves is that a company is still subject to translation risk, where it must periodically translate its local cash reserves into its home currency for financial reporting purposes—which carries with it the risk of recording a translation loss.

Hedging

When all operational and strategic alternatives have been exhausted, it is time to consider buying hedging instruments that offset the risk posed by specific foreign exchange positions. Hedging is accomplished by purchasing an offsetting currency exposure. For example, if a company has a liability to deliver 1 million euros in six months, it can hedge this risk by entering into a contract to purchase 1 million euros on the same date, so that it can buy and sell in the same currency on the same date. The ideal outcome of a hedge is when the distribution of probable outcomes is reduced, so that the size of any potential loss is reduced. The following exhibit shows the effect of hedging on the range of possible outcomes.

Impact of Hedging on Risk Outcome



When a company has a multi-year contract with a customer, it may be necessary to create a long-term hedge to offset the related risk of currency fluctuations. If the customer subsequently terminates the contract early, the company may have to incur a significant cost to unwind the related hedge before its planned termination date. If this scenario appears possible, or if a business has experienced such events in the past, it may make sense to include in the contract a clause stating that the customer bears the cost of unwinding the hedge if there is an early contract termination.

Tip: When entering into a long-term contract for which a hedge is anticipated, be sure to estimate the cost of the hedge in advance, and include it in the formulation of the price quoted to the customer.

The treasurer should decide what proportion of risk exposure to hedge, such as 100% of the booked exposure or 50% of the forecasted exposure. This gradually declining benchmark hedge ratio for forecasted periods is justifiable on the assumption that the level of forecast accuracy declines over time, so the treasurer should at least hedge against the minimum amount of exposure that is likely to occur. A high-confidence currency forecast with little expected volatility should be matched with a higher benchmark hedge ratio, while a questionable forecast might justify a much lower ratio.

Various types of hedges are described in the next section.

Proxy Hedging

If there is a need to deal in a currency that is not actively traded, it can be impossible to obtain a hedging instrument. If so, review other currencies within the same geographic area as the country where the target currency is being used; it is possible that movements in the currencies of several adjacent countries are closely correlated. Correlation occurs when regional economies are closely linked through trade. If this is the case, consider acquiring hedges in adjacent currencies. The main downside of this alternative is the assumption that movements in adjacent currencies will continue to be correlated during the hedging period, which may not be the case. In particular, political or economic upheavals in the economy of an adjacent country could result in a reduction in pricing correlation. If so, under- or over-hedging could result.

Summary

Clearly, there are many risk management alternatives available to a company that must deal with foreign exchange situations. We recommend avoiding active hedging strategies as long as possible, in favor of more passive methods that are easier to understand, implement, and monitor. If the risk situation is too extreme to be completely addressed by passive means, then an active hedging strategy is probably the answer. In the next section, we address several types of active hedging activities.

Types of Hedges

This section describes a number of methods for hedging foreign currency transactions. The first type of hedge, which is a loan denominated in a foreign currency, is designed to offset translation risk. The remaining hedges target the transaction risk related to the currency fluctuations associated with either specific or aggregated business transactions.

Loan Denominated in a Foreign Currency

When a company is at risk of recording a loss from the translation of assets and liabilities into its home currency, it can hedge the risk by obtaining a loan denominated in the functional currency in which the assets and liabilities are recorded. The effect of this hedge is to neutralize any loss on translation of the subsidiary's net assets with a gain on translation of the loan, or vice versa.

EXAMPLE

Suture Corporation has a subsidiary located in London, and which does business entirely within England. Accordingly, the subsidiary's net assets are denominated in pounds. The net assets of the subsidiary are currently recorded at £10 million. To hedge the translation risk associated with these assets, Suture acquires a £10 million loan from a bank in London.

One month later, a change in the dollar/pound exchange rate results in a translation loss of $15,000 on the translation of the subsidiary's net assets into U.S. dollars. This amount is exactly offset by the translation gain of $15,000 on the liability associated with the £10 million loan.

Tip: An ideal way to create an offsetting loan is to fund the purchase or expansion of a foreign subsidiary largely through the proceeds of a long-term loan obtained within the same country, so that the subsidiary's assets are approximately cancelled out by the amount of the loan.

There are two problems with this type of hedge. First, it can be difficult to obtain a loan in the country in which the net assets are located. Second, the company will incur an interest expense on a loan that it would otherwise not need, though the borrowed funds could be invested to offset the interest expense.

The Forward Contract

A forward contract is an agreement under which a business agrees to buy a certain amount of foreign currency on a specific future date, and at a predetermined exchange rate. Forward exchange rates can be obtained for twelve months into the future; quotes for major currency pairs can be obtained for as much as five to ten years in the future.

The exchange rate is comprised of the following elements:

- The spot price of the currency
- The bank's transaction fee
- An adjustment (up or down) for the interest rate differential between the two currencies. In essence, the currency of the country having a lower interest rate will trade at a premium, while the currency of the country having a higher interest rate will trade at a discount. For example, if the domestic interest rate is lower than the rate in the other country, the bank acting as the counterparty adds points to the spot rate, which increases the cost of the foreign currency in the forward contract.

The calculation of the number of discount or premium points to subtract from or add to a forward contract is based on the following formula:

$$\text{Exchange rate} \times \text{interest rate differential} \times \frac{\text{days in contract}}{360} = \text{Premium or discount}$$

Thus, if the spot price of pounds per dollar were 1.5459 and there were a premium of 15 points for a forward contract with a 360-day maturity, the forward rate (not including a transaction fee) would be 1.5474.

By entering into a forward contract, a company can ensure that a definite future liability can be settled at a specific exchange rate. Forward contracts are typically customized, and arranged between a company and its bank. The bank will require a partial payment to initiate a forward contract, as well as final payment shortly before the settlement date.

EXAMPLE

Suture Corporation has acquired equipment from a company in the United Kingdom, which Suture must pay for in 60 days in the amount of £150,000. To hedge against the risk of an unfavorable change in exchange rates during the intervening 60 days, Suture enters into a forward contract with its bank to buy £150,000 in 60 days, at the current exchange rate.

60 days later, the exchange rate has indeed taken a turn for the worse, but Suture's treasurer is indifferent, since he obtains the £150,000 needed for the purchase transaction based on the exchange rate in existence when the contract with the supplier was originally signed.

A forward contract is designed to have a specific settlement date, but the business transaction to which it relates may not be so timely. For example, a business has a contract to sell £10,000 in 60 days, but may not be able to do so if it has not yet received funds from a customer. A *forward window contract* is designed to work around this variability in the timing of receipts from customers by incorporating a range of settlement dates. The treasury staff can then wait for a cash receipt and trigger settlement of the forward contract immediately thereafter.

The primary difficulties with forward contracts relate to their being customized transactions that are designed specifically for two parties. Because of this level of customization, it is difficult for either party to offload the contract to a third party. Also, the level of customization makes it difficult to compare offerings from different banks, so there is a tendency for banks to build unusually large fees into these contracts. Finally, a company may find that the underlying transaction for which a forward contract was created has been cancelled, leaving the contract still to be settled. If so, the treasury staff can enter into a second forward contract, whose net effect is to offset the first forward contract. Though the bank will charge fees for both contracts, this arrangement will settle the company's obligations.

The Futures Contract

A futures contract is similar in concept to a forward contract, in that a business can enter into a contract to buy or sell currency at a specific price on a future date. The difference is that futures contracts are traded on an exchange, so these contracts are for standard amounts and durations. An initial deposit into a margin account is required to initiate a futures contract. The contract is then repriced each day, and if cumulative losses drain the margin account, a company is required to add more funds to the margin account. If the company does not respond to a margin call, the exchange closes out the contract.

Given that futures contracts are standardized, they may not exactly match the timing and amounts of an underlying transaction that is being hedged, which can lead to over- or under-hedging. However, since these contracts are traded on an exchange, it is easier to trade them than forward contracts, which allows the treasury staff to easily unwind a hedge position earlier than its normal settlement date.

In a forward contract, the bank includes a transaction fee in the contract. In a futures contract, a broker charges a commission to execute the deal.

The Currency Option

An option gives its owner the right, but not the obligation, to buy or sell an asset at a certain price (known as the *strike price*), either on or before a specific date. In exchange for this right, the buyer pays an up-front premium to the seller. The income earned by the seller is restricted to the premium payment received, while the buyer has a theoretically unlimited profit potential, depending upon the future direction of the relevant exchange rate.

Currency options are available for the purchase or sale of currencies within a certain future date range, with the following variations available for the option contract:

- **American option.** The option can be exercised on any date within the option period, so that delivery is two business days after the exercise date.
- **European option.** The option can only be exercised on the expiry date, which means that delivery will be two business days after the expiry date.
- **Bermudan option.** The option can only be exercised on certain predetermined dates.

The holder of an option will exercise it when the strike price is more favorable than the current market rate, which is called being *in-the-money*. If the strike price is less favorable than the current market rate, this is called being *out-of-the-money*, in which case the option holder will not exercise the option. If the option holder is inattentive, it is possible that an in-the-money option will not be exercised prior to its expiry date. Notice of option exercise must be given to the counterparty by the notification date stated in the option contract.

A currency option provides two key benefits:

- **Loss prevention.** An option can be exercised to hedge the risk of loss, while still leaving open the possibility of benefiting from a favorable change in exchange rates.
- **Date variability.** The treasury staff can exercise an option within a predetermined date range, which is useful when there is uncertainty about the exact timing of the underlying exposure.

There are a number of factors that enter into the price of a currency option, which can make it difficult to ascertain whether a quoted option price is reasonable. These factors are:

- The difference between the designated strike price and the current spot price. The buyer of an option can choose a strike price that suits his specific circumstances. A strike price that is well away from the current spot price will cost less, since the likelihood of exercising the option is low. However, setting such a strike price means that the buyer is willing to absorb the loss associated with a significant change in the exchange rate before seeking cover behind an option.
- The current interest rates for the two currencies during the option period.
- The duration of the option.
- Volatility of the market. This is the expected amount by which the currency is expected to fluctuate during the option period, with higher volatility making it more likely that an option will be exercised. Volatility is a guesstimate, since there is no quantifiable way to predict it.
- The willingness of counterparties to issue options.

Banks generally allow an option exercise period of no more than three months. Multiple partial currency deliveries within a currency option can be arranged.

Exchange traded options for standard quantities are available. This type of option eliminates the risk of counterparty failure, since the clearing house operating the exchange guarantees the performance of all options traded on the exchange.

EXAMPLE

Suture Corporation has an obligation to buy £250,000 in three months. Currently, the forward rate for the British pound is 1.5000 U.S. dollars, so that it should require $375,000 to buy the £250,000 in 90 days. If the pound depreciates, Suture will be able to buy pounds for less than the $375,000 that it currently anticipates spending, but if the pound appreciates, Suture will have to spend more to acquire the £250,000.

Suture's treasurer elects to buy an option, so that he can hedge against the appreciation of the pound, while leaving open the prospect of profits to be gained from any depreciation in the pound. The cost of an option with a strike price of 1.6000 U.S. dollars per pound is $3,000.

Three months later, the pound has appreciated against the dollar, with the price having changed to 1.75 U.S. dollars per pound. The treasurer exercises the option, and spends $400,000 for the requisite number of pounds (calculated as £250,000 × 1.6000). If he had not purchased the option, the purchase would instead have cost $437,500 (calculated as £250,000 × 1.7500). Thus, Suture saved $34,500 by using a currency option (calculated as the savings of $37,500, less the $3,000 cost of the option).

Currency options are particularly valuable during periods of high currency price volatility. Unfortunately from the perspective of the buyer, high volatility equates to higher option prices, since there is a higher probability that the counterparty will have to make a payment to the option buyer.

The Cylinder Option

Two options can be combined to create a *cylinder option*. One option is priced above the current spot price of the target currency, while the other option is priced below the spot price. The gain from exercising one option is used to partially offset the cost of the other option, thereby reducing the overall cost of the hedge. In effect, the upside potential offered by one option is being sold for a premium payment in order to finance the protection afforded by the opposing option.

The cylinder option is configured so that a company can acquire the right to buy currency at a specified price (a call option) and sell an option to a counterparty to buy currency from the company at a specified price (a put option), usually as of the expiry date. The premium the company pays for the purchased call is partially offset by the premium payable to the company for the put option that it sold.

If the market exchange rate remains between the boundaries established by the two currency options, the company never uses its options and instead buys or sells currency on the open market to fulfill its currency needs. If the market price breaches the strike price of the call option, the company exercises the call option and buys currency at the designated strike price. Conversely, if the market price breaches the strike price of the put option, the counterparty exercises its option to sell the currency to the company.

A variation on the cylinder option is to construct call and put options that are very close together, so that the premium cost of the call is very close to the premium income generated by the put, resulting in a near-zero net hedging cost to the company. The two options have to be very close together for the zero cost option to work, which means that the effective currency price range being hedged is quite small.

Swaps

If a company has or expects to have an obligation to make a payment in a foreign currency, it can arrange to swap currency holdings with a third party that already has the required currency. The two entities engage in a swap transaction by agreeing upon an initial swap date, the date when the cash positions will be reversed back to their original positions, and an interest rate that reflects the comparative differences in interest rates between the two countries in which the entities are located.

Another use for a currency swap is when a forward exchange contract has been delayed. In this situation, the treasury staff would normally sell to a counterparty the currency that it has just obtained through the receipt of an account receivable. If, however, the receivable has not yet been paid, the company can enter into a swap agreement to obtain the required currency and meet its immediate obligation under the forward exchange contract. Later, when the receivable is eventually paid, the company can reverse the swap, returning funds to the counterparty.

A swap arrangement may be for just a one-day period, or extend out for several years into the future. Swap transactions generally do not occur in amounts of less than $5 million, so this technique is not available to smaller businesses.

A potentially serious problem with swaps is the prospect of a default by the counterparty. If there is a default, the company once again assumes its foreign currency liability, and must now scramble to find an alternative hedge.

Netting

There are circumstances where a company has subsidiaries in multiple countries that actively trade with each other. If so, they should have accounts receivable and payable with each other, which could give rise to a flurry of foreign exchange transactions in multiple currencies that could trigger any number of hedging activities. It may be possible to reduce the amount of hedging activity through *payment netting*, where the corporate parent offsets all accounts receivable and payable against each other to determine the net amount of foreign exchange transactions that actually require hedges. A centralized netting function may be used, which means that each subsidiary either receives a single payment from the netting center, or makes a single payment to the netting center. Netting results in the following benefits:

- Foreign exchange exposure is no longer tracked at the subsidiary level
- The total amount of foreign exchange purchased and sold declines, which reduces the amount of foreign exchange commissions paid out
- The total amount of cash in transit (and therefore not available for investment) between subsidiaries declines

This may require modeling of the number of netting cycles per month. If there are many transactions to be netted, then a netting cycle could be as frequent as once a week. A lower volume of transactions could call for a correspondingly longer time period over which to let transactions accumulate, perhaps resulting in a monthly netting cycle.

Tip: It is easier to create an intracompany netting system when there is already a centralized accounts payable function for the entire business, which is called a *payment factory*.

Intracompany netting will still result in some payments between subsidiaries located in different countries. Since each subsidiary may be operating its own cash concentration system, this means that cash must be physically shifted from one cash pool to another, which is inefficient. Where possible, the treasury staff should consider creating cash pools that span international boundaries, so that there is no need for cross-border transfers between cash pools. The result is essentially free cash transfers within the company.

The same concept can be applied to payables and receivables with outside entities, though a considerable amount of information sharing is needed to make the concept work. In some industries where there is a high level of trade between companies, industry-wide netting programs have been established that routinely offset a large proportion of the payables and receivables within the industry. The net result is that all offsetting obligations are reduced to a single payment per currency per value date between counterparties.

A great deal more than just trade receivables and trade payables transactions can be included in netting arrangements. All of the following additional transactions are examples of what might be included in a netting arrangement:

- Dividend payments
- Intercompany loans
- Interest and principal payments on loans
- Investments
- Management fees
- Royalty and licensing payments

However, salary and wage payments are not included in netting, nor are tax payments.

A related concept is *close-out netting*, where counterparties having forward contracts with each other can agree to net the obligations, rather than engaging in a large number of individual contract settlements. Before engaging in close-out netting, discuss the concept with corporate counsel. A case has been made in some jurisdictions that close-out netting runs counter to the interests of other creditors in the event of a bankruptcy by one of the counterparties.

A downside of netting is that the accounting departments of the participating companies must sort out how their various transactions are settled. This requires a procedure for splitting a group of netted transactions into individual payments and receipts in the cash receipts and accounts payable modules of their accounting systems. This can require a considerable amount of coordination effort, as well as systems development time. Here are several other concerns to address when deciding whether to engage in a netting program:

- **Bank holidays.** There are different bank holidays in different countries, so factor these non-processing days into the consideration of when payments are to be processed through the system.
- **Costs.** Only engage in netting after conducting a complete cost-benefit analysis to determine whether such an arrangement can indeed provide a net benefit to the organization. If there are few applicable transactions, the overhead cost associated with maintaining a netting program could overwhelm any possible benefits to be gained.
- **Tax withholdings.** Some taxing authorities levy a withholding on certain payments, which must still be made, irrespective of other netting arrangements. This can be a particularly difficult area to integrate into a netting system.
- **Transaction accuracy.** If transactions are not input to the system correctly, there is a risk of diverting a significant amount of cash into the wrong currency. Another concern is the timeliness of data entry, since a late entry may not be addressed until the following netting cycle.

If there are areas of particular netting complexity, it could make sense to avoid these transactions until a later date, and initially roll out the system using the simplest set of transactions. After all bugs are eliminated from the system, including additional and more complex transactions could then be contemplated.

Cash Flow Predictions and Hedging

The treasury department can choose to hedge against individual contracts, but this calls for a large number of hedges, and constant monitoring of the cash flows associated with each individual contract. An easier approach by far is to aggregate the cash flows associated with all outstanding and projected contracts, and conduct hedging operations against the net amount of cash flows. Doing so greatly reduces the amount of hedging activity.

The level of detail required for aggregated hedging is not simply a single forecast for the company as a whole. Instead, the forecast needs to drill down to the subsidiary level, tracking both current and expected foreign exchange positions by currency. Only by creating forecasts at this level of detail can you understand which currency positions can be netted, and which residual balances should be hedged against.

Because of the accuracy of cash forecasting that is needed, it is difficult for a multi-subsidiary company interested in proper hedging to operate without an integrated accounting and treasury system that automatically assembles the necessary information. Otherwise, the treasury staff is placed in the position of spending an inordinate amount of time to collect, verify, and assemble cash flow information from all over the company.

In addition to cash flow predictions, the treasury staff should constantly update all unhedged positions for their current market rates, so that the treasurer is continually aware of any gains and losses arising from activities outside of the company's hedging program.

Hedging Best Practices

Hedging is among the more complex cash management tasks. Given its difficulty, there is a significant risk that it will not be structured or carried through successfully, which may result in losses. The following bullet points note a number of best practices that can improve the effectiveness of a hedging program:

- **Procedural support.** There should be a clearly-defined procedure that states the circumstances under which hedges are to be employed, as well as how to determine the amount and type of hedge, and how to enact and terminate the hedge.
- **Policy updates.** The treasury staff should continually review counterparty risks by region and individual entity, and make policy updates regarding risk limits whenever necessary. This keeps a business from finding itself with excessive exposure because it has been relying on a years-old risk limit policy.
- **Metrics.** Create a performance measurement system that tracks the costs and benefits of a hedging program. The resulting metrics should be routinely examined to see if the hedging program should be adjusted. It is of particular interest to compare the results of a hedging program to what would have happened if there had been no hedging program at all.
- **Forecasting dangers.** It is best to create hedges that are driven by a company's operating needs, rather than forecasts of future changes in exchange rates. It is extremely difficult to make consistently accurate exchange rate forecasts, so hedging to counteract a forecasted rate change will eventually lead to an incorrect hedge that could create serious losses.
- **Hedging simplicity.** Some of the more exotic hedging instruments are difficult to understand, and do not clarify the level of risk that a business is undertaking. It is nearly always better to use hedging instruments that are easily documented, do not incorporate leverage, and do not present the risk of over- or under-hedging the underlying foreign exchange exposure.

- **Match durations.** The duration of a hedge transaction should match the duration of the underlying exposure. Otherwise, a short-term hedge that must be continually rolled over will involve a different cost for each successive transaction, which may cumulatively be quite expensive.

Accounting for Hedges

When a company has foreign exchange holdings, the holdings are revised in the accounting records at the end of each accounting period to match their market values (known as *mark to market*). These adjustments are recorded within the corporate income statement, and so will have an impact on the reported level of profitability. If a company wants to avoid the recordation of foreign exchange gains and losses, it can create hedging transactions that offset the impact of the currency positions.

In general, a properly documented hedge allows a business to record changes in value in other comprehensive income, rather than in earnings, until such time as the underlying transaction has been completed. The detailed accounting varies, depending upon the type of hedge being used. In this section, we address the accounting for fair value hedges, cash flow hedges, and hedges of investments in foreign operations.

Before dealing with the accounting for each type of hedge we must first address the concept of *hedge effectiveness*. Hedge effectiveness is the proportion of the change in the cash flows or fair value of a hedged item that are offset by opposing variations in the cash flows or fair value of a designated hedging instrument. Much of the accounting for hedges is based on the concept of hedging effectiveness, which we will return to repeatedly in this section.

EXAMPLE

Suture Corporation pays $1 million for an investment that is denominated in pounds. Suture's treasurer enters into a hedging transaction that is also denominated in pounds, and which is designed to be a hedge of the investment. One year later, Suture experiences a loss of $12,000 on the investment and a $9,000 gain on the hedging instrument. The full $9,000 gain on the hedging instrument is considered effective, so only the difference between the investment and its hedge - $3,000—is recorded as a loss in earnings.

There are documentation requirements that must be met when establishing a hedge. The documentation must include a description of the hedging relationship, the company's risk management objective, and how this relates to use of the hedge. If this documentation is not completed at the beginning of a hedging transaction, then all subsequent changes in value must be recorded in earnings at once.

NOTE: If a hedge does not prove to be effective in offsetting changes in the item being hedged, the hedge no longer qualifies for hedge accounting.

A *fair value hedge* is designed to offset changes in the fair value of a specific asset or liability. It is used to hedge against foreign exchange transactions that are currently in place. When there is a fair value hedge of a foreign currency exposure and the exchange rate changes, the change should be accounted for in the following way:

- Recognize in current earnings any hedge ineffectiveness
- Recognize in current earnings the gain or loss on any changes in the fair value of the hedging instrument
- Recognize in current earnings the change in fair value of the hedged item

The following example illustrates the concept:

EXAMPLE

Suture Corporation places an order from an English supplier on January 1 for equipment that is to be delivered to Suture on June 30. The £1,000,000 price is to be paid upon delivery. Suture has an exposure to foreign exchange

risk for a period of six months, since any appreciation of the pound during that time will increase the cost of the equipment in U.S. dollars.

To eliminate this risk, Suture enters into a six-month forward contract to purchase pounds on June 30. The spot rate on January 1 is $1.5474, and the forward rate for settlement on June 30 is 1.5770. The terms of the forward contract are that Suture will pay U.S. $1,577,000 to its bank and receive £1,000,000 on June 30. Suture will then pay the £1,000,000 to its supplier.

The time value of money is assumed to be ¼% per month, or 3% per year. The forward rate as of March 31 for settlement on June 30 is 1.5870, and the spot rate on March 31 is 1.5800. The spot rate on June 30 is 1.5900.

On March 31, Suture's accounting staff records the following entries for the company's quarterly financial statements:

	Debit	Credit
Forward currency contract	9,927	
Gain on forward contract		9,927

The calculation of the gain is:

0.01 change in forward rate × £1,000,000 =
$10,000 to be received three months later, at a 3% annual discount rate

	Debit	Credit
Loss on purchase commitment	32,363	
Commitment obligation		32,363

The calculation of the loss is:

0.0326 change in spot rate × £1,000,000 =
$32,600 to be paid three months later, at a 3% annual discount rate

On June 30, Suture's accounting staff records the following entries for the company's quarterly financial statements:

	Debit	Credit
Forward currency contract	3,073	
Gain on forward contract		3,073

The calculation of the gain is:

0.013 change in forward rate × £1,000,000 = $13,000
- $9,927 already recognized = $3,073

	Debit	Credit
Loss on purchase commitment	10,237	
Commitment obligation		10,237

The calculation of the loss is:

0.0426 change in spot rate × £1,000,000 = $42,600
- $32,363 already recognized = $10,237

The commitment obligation is then combined with the original price of the equipment order to offset the total cash amount paid to the supplier at the ending spot rate of 1.5900. This entry also closes out the commitment obligation.

	Debit	Credit
Commitment obligation	42,600	
Equipment (fixed assets)	1,547,400	
Cash		1,590,000

Suture is also paid cash on its settlement of the forward contract, which was based on the June 30 spot rate, less the initial forward rate of 1.5770. The entry is:

	Debit	Credit
Cash	13,000	
Forward currency contract		13,000

A *cash flow hedge* is designed to offset the variability of forecasted cash flows. It is used to hedge against foreign exchange transactions that have not yet occurred, but which are expected to occur. When there is a cash flow hedge of a foreign currency exposure and the exchange rate changes, the change should be accounted for in the following way:

- Recognize in current earnings any hedge ineffectiveness
- Recognize in other comprehensive income the gain or loss on the hedging instrument
- When the hedged forecasted transaction impacts earnings, reclassify the amounts recorded in other comprehensive income to earnings

When there is a hedge of the net investment in a foreign operation and the exchange rate changes, the change should be accounted for in the following way:

- Recognize in current earnings any hedge ineffectiveness
- Recognize in other comprehensive income the gain or loss on the effective portion of the hedging instrument
- Recognize in other comprehensive income the gain or loss on translation of the foreign net assets
- When the foreign net assets are eventually dispositioned, reclassify the amounts recorded in other comprehensive income to earnings

A common technique for hedging a foreign investment is to obtain a loan denominated in the same foreign currency. Under normal consolidation rules, the hedge itself must be translated back into the parent company's home currency. When translated, any gain or loss on the effective portion of the hedge is recorded as a translation adjustment. The following example illustrates the concept:

EXAMPLE

Suture Corporation invests $20 million in a new subsidiary located in England. The functional currency of this subsidiary is the pound. The exchange rate on the investment date is $1 = £0.6463, so the initial investment is priced at £12,926,000. Suture takes out a loan in England in the amount of £9,695,000 (which translates to $15,000,000) and designates it as a hedge of its investment in the subsidiary. The stated strategy is that any change in the fair value of the loan attributed to foreign exchange risk will offset 75% of the translation gains or losses on the Suture investment.

One year later, the exchange rate has changed to $1 = £0.6600, which yields the following loss on the investment for Suture:

(£12,926,000 ÷ 0.6600 = $19,585,000) - $20,000,000
= $(415,000) Investment translation loss

Against this loss is set the following gain on the related loan:

(£9,695,000 ÷ 0.6600 = $14,689,000) - $15,000,000
= $311,000 Loan translation gain

Suture creates the following entry to record the reduction in value of its investment, as well as the translation gain related to its loan:

	Debit	Credit
Cumulative translation adjustment	415,000	
Investment in subsidiary		415,000
Pound-denominated debt	311,000	
Cumulative translation adjustment		311,000

The accounting for hedges is clearly complex, and the only impact on the financial statements is a delay in the recognition of gains or losses. If management is not concerned about more immediate recognition, or if the gains or losses are minor, it may make sense to ignore the multitude of compliance issues associated with hedge accounting. Instead, simply create hedges as needed and record gains or losses on foreign exchange holdings and hedges at once.

The Foreign Exchange Hedging Procedure

When a business intends to use foreign exchange hedging, it may be prudent to create a hedging procedure to ensure that all steps mandated by the accounting standards are fulfilled. Otherwise, favorable reporting rules cannot be applied to hedges, resulting in the immediate recognition of gains and losses on foreign exchange holdings and offsetting hedges. A foreign exchange hedging procedure is outlined below:

1. **Calculate hedge requirements.** Based on the company's forecast of foreign currency holdings or obligations, determine the amount and duration of the hedging transaction needed to offset these holdings or obligations.

2. **Examine preliminary hedge.** Obtain information about the prospective hedge, and address the following issues:
   - Verify the sufficiency of the counterparty's credit rating
   - Determine the level of effectiveness of the hedging strategy
   - Review the proposed contract for legal issues
   - Obtain approval of the hedge

   Control issues: It may be useful to use a proposed hedge signoff sheet, so that each person involved in a hedge can formally document that their assigned tasks were completed.

3. **Begin hedge.** Enter into the hedging transaction.
   Control issues: Be sure to confirm the details of the hedging transaction with the counterparty. Otherwise, you may find that the terms of the hedge do not meet the company's expectations, and may need to close out the transaction and start over.

   Tip: An alternative to waiting for confirmation of a hedge from the other party is to issue your own confirmation. If the other party does not take issue with your confirmation, this can be taken as a form of agreement with the stated terms.

4. **Document the hedge.** Create all hedging documentation required under the applicable accounting standards. This includes documentation of:

- How the company plans to measure the effectiveness of the hedging transaction
- The relationship between the foreign exchange position and the hedging instrument
- The risk management objectives of the company
- The specifics of the hedging strategy

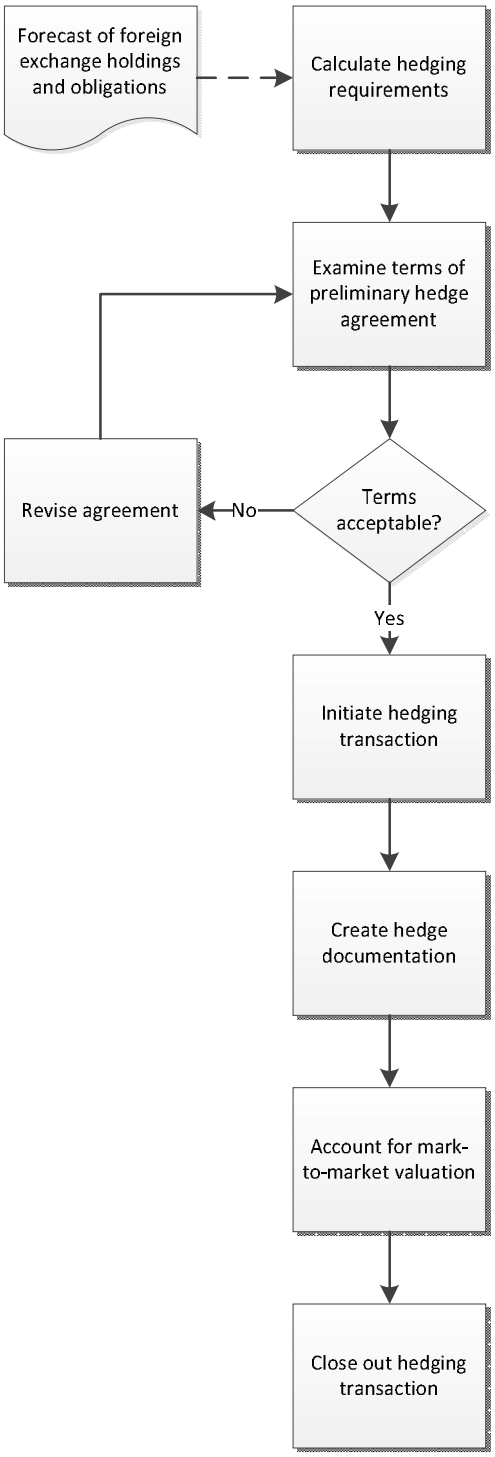
This information is needed to properly account for the hedge.

5. **Account for the hedge.** At the end of each reporting period, charge to comprehensive income the effective portion of a hedge for any gains or losses resulting from having marked the hedge to market. Also, charge to profit or loss any ineffective portion of a hedge that is caused by having marked to market. If any hedge losses are considered to be non-recoverable and they have previously been recorded in other comprehensive income, shift them to earnings. See the Accounting for Hedges section for more information.
   Control issues: To ensure that this step is completed, include it in the list of period-end closing activities.

6. **Close out the hedge.** Once the hedging transaction has been completed and settled, move all gains and losses initially recorded in the other comprehensive income account to earnings. See the Accounting for Hedges section for more information.
   Control issues: Review the other comprehensive income account to ensure that all transactions related to a closed hedge have been removed from that account.

   The following exhibit shows a streamlined view of the foreign exchange hedging procedure.

Foreign Exchange Hedging Process Flow



Chapter Summary

Risk is a part of any business. The job of the treasurer is to quantify this risk and then decide how to deal with it. In many cases, the amount of risk is so small that no action need be taken. In other cases, operational or strategic changes can be used to minimize or sidestep risk. In the remaining situations, active risk mitigation tactics should be employed. Some of the more active tactics are ones in which the

treasury staff has not been trained. Given the potential cost of engaging in an incorrect hedging strategy, it may be better to avoid hedging entirely, than to hedge incorrectly due to a skimpy knowledge of the subject. An alternative approach for a neophyte treasury department is to outsource the more complex hedging strategies to an outside firm, and then gradually ramp up the skill level of the in-house staff by having them observe how the hedging activities are being implemented.

Review Questions

1. A cross-rate is:
    A. Always between the U.S. dollar and another currency
    B. The exchange rate between the U.S. dollar and the British pound
    C. An exchange rate between two currencies, neither of which is the U.S. dollar
    D. The variation in a currency pair between two dates

2. Translation exposure:
    A. Refers to the risk of incorrectly entering into a currency transaction because of language problems that result in incorrect deal documentation
    B. Arises from holding foreign currencies for an excessively brief period of time
    C. Occurs when home currency funds cannot be repatriated out of a country
    D. Is the risk of loss when converting from the functional currency of a subsidiary to that of the parent company

3. Proxy hedging is used:
    A. When a currency is not actively traded
    B. Only when there is a brisk trade in the targeted currency
    C. Only when currency movements are not correlated
    D. When the country having a correlated currency is going through political upheavals

4. A forward window contract is used when:
    A. There are cross-border exchange restrictions
    B. The holder only wants the option to buy a foreign currency
    C. The timing of offsetting receipts is uncertain
    D. The timing of offsetting receipts is certain

5. A cylinder option is used to:
    A. Maximize upside gains from a hedge
    B. Reduce the overall cost of a hedge
    C. Minimize losses from a hedge
    D. Ensure that one option or the other will always be exercised

Review Answers

1. A. Incorrect. A cross-rate does not involve the U.S. dollar.
   B. Incorrect. The exchange rate between the U.S. dollar and the British pound is called the cable.
   C. **Correct.** A cross-rate is an exchange rate between two currencies, neither of which is the U.S. dollar.
   D. Incorrect. There is no term for variations in a currency pair between two dates.

2. A. Incorrect. Translation exposure does not refer to incorrect deal documentation.
   B. Incorrect. Holding foreign currencies can result in translation exposure, but is more likely over longer holding periods.
   C. Incorrect. Translation exposure would occur if funds were held in the functional currency of the subsidiary.
   D. **Correct.** Translation exposure is the risk of loss when converting from the functional currency of a subsidiary to that of the parent company.

3. A. **Correct.** Proxy hedging is used when a currency is not actively traded.
   B. Incorrect. Proxy hedging is not necessary when there is active trading in a currency.
   C. Incorrect. Proxy hedging should only be used when there is correlation in currency movements.
   D. Incorrect. Proxy hedging should not be used when there is political or economic uncertainty.

4. A. Incorrect. Cross-border exchange restrictions should eliminate the market for a forward contract.
   B. Incorrect. A forward window contract is not an option.
   C. **Correct.** A forward window contract is used when the timing of offsetting receipts is uncertain.
   D. Incorrect. A standard forward contract can be used when the timing of offsetting receipts is certain.

5. A. Incorrect. A cylinder option does not maximize upside gains.
   B. **Correct.** A cylinder option is used to reduce the overall cost of a hedge.
   C. Incorrect. A cylinder option does not minimize losses from a hedge.
   D. Incorrect. A cylinder option is not exercised if prices remain close to the spot price in existence when the option was constructed.

Chapter 14
Interest Rates

Learning Objectives

- Discern when it would be a reasonable option not to mitigate interest rate risk
- Determine why an owner would use a call option
- Identify a characteristic of an interest rate swaption

Introduction

Part of the cash management function is dealing with the ongoing variability in interest rates. If a company must borrow funds, it is subject to ongoing changes in the interest rate charged on these borrowings. Or, if the business is investing funds, the same problem applies. In short, the market rate of interest can have a profound impact on the profits of a business that is either borrowing or investing significant amounts of cash.

In this chapter, we examine the methods available for mitigating the impact of interest rate variability, with an emphasis on how these methods function. Somewhere in the continuum of solutions presented, you may find a technique that provides a cost-effective solution to your needs that is not excessively complex to implement.

Types of Interest Risk

Interest rate risk involves the risk of increases in interest rates on debt, as well as reductions in interest rates for investment instruments, with the attendant negative impact on profitability. This risk can take the following forms:

- **Absolute rate changes.** The market rate of interest will move up or down over time, resulting in immediate variances from the interest rates paid or earned by a company. This rate change is easily monitored.
- **Reinvestment risk.** Investments must be periodically reinvested and debt reissued. If interest rates happen to be unfavorable during one of these rollover periods, a company will be forced to accept whatever interest rate is available.
- **Yield curve risk.** The yield curve shows the relationship between short-term and long-term interest rates, and typically slopes upward to indicate that long-term debt carries a higher interest rate to reflect the risk to the lender associated with such debt. If the yield curve steepens, flattens, or declines, these relationships change the debt duration that a company should use in its borrowing and investing strategies.

Interest risk is a particular concern for those businesses using large amounts of debt to fund their operations, since even a small increase in the interest rate could have a profound impact on profits, when multiplied by the volume of debt employed. Further, a sudden boost in interest expense could worsen a company's interest coverage ratio, which is a common covenant in loan agreements, and which could trigger a loan termination if the minimum ratio covenant is not met.

Risk Management Alternatives

The primary objective of interest risk management is to keep fluctuations in interest rates from impacting company earnings. Management can respond to this objective in many ways, ranging from a conscious decision to take no action, passing through a number of relatively passive alternatives, and culminating in several active techniques for risk mitigation. We provide an overview of each option in this section.

Take No Action

There may be situations where a company has minimal investments that earn interest, or issues only minor amounts of debt. If so, it is certainly acceptable to not implement an aggressive risk management campaign related to interest rates. However, this state of affairs does not typically last for long, after which there will be some degree of risk related to interest rates. In anticipation of such an event, it is useful to model the amount of interest rate change that must occur before there will be a serious impact on company finances. Once that trigger point is known, the treasurer can begin to prepare any of the risk mitigation alternatives noted later in this section.

Avoid Risk

The risk associated with interest rates arises between external entities and a business; it does not arise between the subsidiaries of the same business. Thus, a company can act as its own bank to some extent, by providing intercompany lending arrangements at interest rates that are not subject to fluctuations. This is particularly useful in a multi-national corporation, where cash reserves in different currencies may be scattered throughout the business, and can be lent back and forth to cover immediate cash needs.

Another way to avoid risk is to operate the business in such a conservative manner that the company has no debt, thereby eliminating the risk associated with interest rates on debt. The same result can be achieved by using invested funds to pay off any outstanding debt. The main downside of the low-debt method is that a company may be constraining its growth by not taking advantage of a low-cost source of funds (i.e., debt).

Asset and Liability Matching

A key trigger for interest rate risk is when short-term debt is used to fund an asset that is expected to be held for a long period of time. In this situation, the short-term debt must be rolled over multiple times during the life span of the asset or until the debt is paid off, introducing the risk that each successive debt rollover will result in an increased interest rate. To avoid this risk, the treasury staff should arrange for financing that approximately matches the useful life of the underlying asset. Thus, spending $1 million for a machine that is expected to have a useful life of 10 years should be funded with a loan that also has a 10-year life.

Hedging

Interest rate hedging is the practice of acquiring financial instruments whose effects offset those of the underlying scenario causing interest rate fluctuations, so that the net effect is minimized rate fluctuations. Hedges fall into two categories:

- **Forward rate agreements and futures.** These financial instruments are designed to lock in an interest rate, so that changes in the actual interest rate above or below the baseline interest rate do not impact a business. These instruments do not provide any flexibility for taking advantage of favorable changes in interest rates.
- **Options.** These financial instruments only lock in an interest rate if the holder wants to do so, thereby presenting the possibility of benefiting from a favorable change in an interest rate.

The various types of hedges are discussed in the following sections.

The Forward Rate Agreement

A forward rate agreement (FRA) is an agreement between two parties to lock in a specific interest rate for a designated period of time, which usually spans just a few months. Under an FRA, the parties are protecting against opposing exposures: the FRA buyer wants to protect against an increase in the interest rate, while the FRA seller wants to protect against a decrease in the interest rate. Any payout under an FRA is based on a change in the reference interest rate from the interest rate stated in the contract (the FRA rate). An FRA is not related to a specific loan or investment—it simply provides interest rate protection.

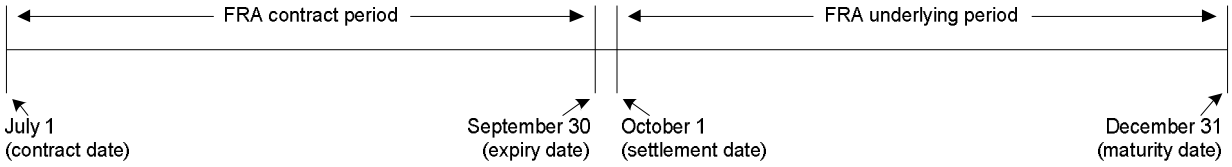
The FRA rate is based on the yield curve, where interest rates usually increase for instruments having longer maturities. This means that the FRA rate typically increases for periods further in the future.

Several date-specific terms are referred to in a forward rate agreement, and are crucial to understanding how the FRA concept works. These terms are:

1. **Contract date.** The date on which the FRA begins.
2. **Expiry date.** The date on which any variance between the market rate and the reference rate is calculated.
3. **Settlement date.** The date on which the interest variance is paid by one counterparty to the other.
4. **Maturity date.** The final date of the date range that underlies the FRA contract.

In essence, these four dates anchor the two time periods covered by an FRA. The first period, which begins with the contract date and ends with the expiry date, spans the term of the contract. The second period begins with the settlement date and ends with the maturity date, and spans the period that underlies the contract. This date range is shown graphically in the following example.

Relevant FRA Dates



The FRA rate is based on a future period, such as the period starting in one month and ending in four months, which is said to have a "1 × 4" FRA term, and has an effective term of three months. Similarly, a contract starting in three months and ending in six months is said to have a "3 × 6" FRA term, and also has an effective term of three months.

At the *beginning* of the designated FRA period, the interest rate stated in the contract is compared to the reference rate. The reference rate is usually a well-known interest rate index, such as the London Interbank Offered Rate (LIBOR). If the reference rate is higher, the seller makes a payment to the FRA buyer, based on the incremental difference in interest rates and the notional amount of the contract. The payment calculation is shown in the following example. If the reference rate is lower than the interest rate stated in the contract, the buyer makes a payment to the FRA seller. The payment made between the counterparties must be discounted to its present value, since the payment is associated with the FRA underlying period that has not yet happened. Thus, the discount assumes that the money would actually be due on the maturity date, but is payable on the settlement date (which may be months before the maturity date). The calculation for discounting the payment between counterparties is:

$$\frac{\text{Settlement amount}}{1 + (\text{Days in FRA underlying period}/360\ \text{Days} \times \text{Reference rate})} = \text{Discounted Payment}$$

The reason why the contract payment is calculated at the *beginning* of the designated FRA period is that the risk being hedged by the contract was from the initial contract date until the date on which the FRA buyer expects to borrow money and lock in an interest rate. For example, a company may enter into an FRA in January, because it is uncertain of what the market interest rate will be in April, when it intends to borrow funds; the period at risk is therefore from January through April. The following example illustrates the concept.

EXAMPLE

Suture Corporation has a legal commitment to borrow $50 million in two months, and for a period of three months. Suture's treasurer is concerned that there may be an increase in the interest rate during the two-month period prior to borrowing the $50 million. The treasurer elects to hedge the risk of an increase in the interest rate

by purchasing a three-month FRA, starting in two months. A broker quotes a rate of 5.50%. Suture enters into an FRA at the 5.50% interest rate, with 3rd National Bank as the counterparty. The notional amount of the contract is for $50 million.

Two months later, the reference rate is 6.00%, so 3rd National pays Suture the difference between the contract rate and reference rate, which is 0.50%. At the same time, Suture borrows $50 million at the market rate (which happens to match the reference rate) of 6.00%. Because of the FRA, Suture's effective borrowing rate is 5.50%.

The amount paid by 3rd National to Suture is calculated as:

(Reference rate – FRA rate) × (FRA days/360 days) × Notional amount = Profit or loss

or

(6.00% - 5.50%) × (90 days/360 days) × $50 million = $62,500

Since the payment is made at the beginning of the borrowing period, rather than at its end, the $62,500 payment is discounted and its present value paid. The discounting calculation for the settlement amount is:

$$\frac{\$62,500}{1 + (90/360 \text{ Days} \times 6.00\%)} = \$61,576.35$$

What if the reference rate had fallen by 0.50%, instead of increasing? Then Suture would have paid 3rd National the discounted amount of $62,500, rather than the reverse. Suture would also end up borrowing the $50 million at the new market rate of 5.00%. When the payment to 3rd National is combined with the reduced 5.00% interest rate, Suture will still be paying a 5.50% interest rate, which is what it wanted all along.

From the buyer's perspective, the result of an FRA is that it pays the expected interest rate—no higher, and no lower.

The Futures Contract

An interest rate futures contract is conceptually similar to a forward contract, except that it is traded on an exchange, which means that it is for a standard amount and duration. The standard size of a futures contract is $1 million, so multiple contracts may need to be purchased to create a hedge for a specific loan or investment amount. The pricing for futures contracts starts at a baseline figure of 100, and declines based on the implied interest rate in a contract. For example, if a futures contract has an implied interest rate of 5.00%, the price of that contract will be 95.00. The calculation of the profit or loss on a futures contract is derived as follows:

Notional contract amount × Contract duration/360 Days × (Ending price – Beginning price)

Most trading in interest rate futures is in Eurodollars (U.S. dollars held outside of the United States), and are traded on the Chicago Mercantile Exchange.

Hedging is not perfect, since the notional amount of a contract may vary from the actual amount of funding that a company wants to hedge, resulting in a modest amount of either over- or under-hedging. For example, hedging a $15.4 million position will require the purchase of either 15 or 16 $1 million contracts. There may also be differences between the time period required for a hedge and the actual hedge period as stated in a futures contract. For example, if there is a seven month exposure to be hedged, a treasurer could acquire two consecutive three-month contracts, and elect to have the seventh month be unhedged.

Tip: If the buyer wants to protect against interest rate variability for a longer period, such as for the next year, it is possible to buy a series of futures contracts covering consecutive periods, so that coverage is achieved for the entire time period.

EXAMPLE

The treasurer of Suture Corporation wants to hedge an investment of $10 million. To do so, he sells 10 three-month futures contracts with contract terms of three months. The current three-month LIBOR is 3.50% and the 3 × 6 forward rate is 3.75%. These contracts are currently listed on the Chicago Mercantile Exchange at 96.25, which is calculated as 100 minus the 3.75% forward rate.

When the futures contracts expire, the forward rate has declined to 3.65%, so that the contracts are now listed at 96.35 (calculated as 100 – the 3.65 percent forward rate). By engaging in this hedge, Suture has earned a profit of $2,500, which is calculated as follows:

$$\$10{,}000{,}000 \times (90/360) \times (0.9635 \text{ Ending price} - 0.9625 \text{ Beginning price})$$
$$= \$2{,}500$$

When the buyer purchases a futures contract, a minimum amount must initially be posted in a margin account to ensure performance under the contract terms. It may be necessary to fund the margin account with additional cash (a *margin call*) if the market value of the contract declines over time (margin accounts are revised daily, based on the market closing price). If the buyer cannot provide additional funding in the event of a contract decline, the futures exchange closes out the contract prior to its normal termination date. Conversely, if the market value of the contract increases, the net gain is credited to the buyer's margin account. On the last day of the contract, the exchange marks the contract to market and settles the accounts of the buyer and seller. Thus, transfers between buyers and sellers over the life of a contract are essentially a zero-sum game, where one party directly benefits at the expense of the other.

It is also possible to enter into a bond futures contract, which can be used to hedge interest rate risk. For example, a business that has borrowed funds can hedge against rising interest rates by selling a bond futures contract. Then, if interest rates do in fact rise, the resulting gain on the contract will offset the higher interest rate that the borrower is paying. Conversely, if interest rates subsequently fall, the borrower will experience a loss on the contract, which will offset the lower interest rate now being paid. Thus, the net effect of the contract is that the borrower locks in the beginning interest rate through the period of the contract.

Tip: A bond futures contract is not a perfect hedge, for it is also impacted by changes in the credit rating of the bond issuer.

When a purchased futures contract expires, it is customary to settle it by selling a futures contract that has the same delivery date. Conversely, if the original contract was sold to a counterparty, then the seller can settle the contract by buying a futures contract that has the same delivery date.

The following table notes the key differences between forward rate agreements and futures contracts. Similarities between the two instruments are excluded from the table.

Differences between a Futures Contract and FRA

Feature	Futures Contract	Forward Rate Agreement
Trading platform	Exchange-based	Between two parties
Counterparty	The exchange	Single counterparty
Collateral	Margin account	None
Agreement	Standardized	Modified
Settlement	Daily mark to market	On expiry date

The preceding table reveals two key differences between a futures contract and an FRA. First, there can be significant counterparty risk in an FRA, since the contract period can be lengthy, and financial conditions can change markedly over that time. Second, a futures contract is settled every day, which can create pressure to fund a margin call if there are significant losses on the contract.

Interest Rate Swaps

An interest rate swap is a customized contract between two parties to swap two schedules of cash flows that could extend for anywhere from one to 25 years, and which represent interest payments. Only the interest rate obligations are swapped, not the underlying loans or investments from which the obligations are derived. The counterparties are usually a company and a bank. There are many types of rate swaps; we will confine this discussion to a swap arrangement where one schedule of cash flows is based on a floating interest rate, and the other is based on a fixed interest rate. For example, a five-year schedule of cash flows based on a fixed interest rate may be swapped for a five-year schedule of cash flows based on a floating interest rate that is tied to the LIBOR.

Tip: To prevent confusion, replicate the same swap terms across all swap agreements. Replicated terms should include the reference rate, the interest calculation method, and the coupon frequency. Other terms, such as the notional amount and swap term, will probably vary by agreement.

The most common reason to engage in an interest rate swap is to exchange a variable-rate payment for a fixed-rate payment, or vice versa. Thus, a company that has only been able to obtain a floating-rate loan can effectively convert the loan to a fixed-rate loan through an interest rate swap. This approach is especially attractive when a borrower is only able to obtain a fixed-rate loan by paying a premium, but can combine a variable-rate loan and an interest rate swap to achieve a fixed-rate loan at a lower price.

A company may want to take the reverse approach and swap its fixed interest payments for floating payments. This situation arises when the treasurer believes that interest rates will decline during the swap period, and wants to take advantage of the lower rates.

A swap contract is settled through a multi-step process, which is:

1. Calculate the payment obligation of each party, typically once every six months through the life of the swap arrangement.
2. Determine the variance between the two amounts.
3. The party whose position is improved by the swap arrangement pays the variance to the party whose position is degraded by the swap arrangement.

Thus, a company continues to pay interest to its banker under the original lending agreement, while the company either accepts a payment from the rate swap counterparty, or issues a payment to the counterparty, with the result being that the net amount of interest paid by the company is the amount planned by the business when it entered into the swap agreement.

EXAMPLE

Suture Corporation has a $15 million variable-rate loan outstanding that matures in two years. The current interest rate on the loan is 6.5%. Suture enters into an interest rate swap agreement with Big Regional Bank for a fixed-rate 7.0% loan with a $15 million notional amount. The first scheduled payment swap date is in six months. On that date, the variable rate on Suture's loan has increased to 7.25%. Thus, the total interest payments on the swap date are $543,750 for Suture and $525,000 for Big Regional. Since the two parties have agreed to swap payments, Big Regional pays Suture the difference between the two payments, which is $18,750.

Suture issues an interest payment of $543,750 to its bank. When netted with the cash inflow of $18,750 from Big Regional, this means that the net interest rate being paid by Suture is 7.0%.

Several larger banks have active trading groups that routinely deal with interest rate swaps. Most swaps involve sums in the millions of dollars, but some banks are willing to engage in swap arrangements involving amounts of less than $1 million. There is a counterparty risk with interest rate swaps, since one party could fail to make a contractually-mandated payment to the other party. This risk is of particular concern when a swap arrangement covers multiple years, since the financial condition of a counterparty could change dramatically during that time.

If there is general agreement in the marketplace that interest rates are headed in a certain direction, it will be more expensive to obtain a swap that protects against interest rate changes in the anticipated direction.

Interest Rate Options

An option gives its owner the right, but not the obligation, to trigger a contract. The contract can be either a call option or a put option. A *call option* related to interest rates protects the option owner from rising interest rates, while a *put option* protects the option owner from declining interest rates. The party selling an option does so in exchange for a one-time premium payment. The party buying an option is doing so to mitigate its risk related to a change in interest rates.

An interest rate option can be relatively inexpensive if there has been or is expected to be little volatility in interest rates, since the option seller does not expect interest rates to move enough for the option to be exercised. Conversely, if there has been or is expected to be considerable interest rate volatility, the option seller must assume that the option will be exercised, and so sets a higher price. Thus, periods of high interest rate volatility may make it cost-prohibitive to buy options.

Tip: An interest rate hedge using an option may not be entirely successful if the reference rate used for the option is not the same one used for the underlying loan. For example, the reference rate for an option may be LIBOR, while the rate used for the underlying loan may be a bank's prime rate. The result is a hedging mismatch that can create an unplanned gain or loss.

An interest rate option sets a *strike price*, which is a specific interest rate at which the option buyer can borrow or lend money. The contract also states the amount of funds that the option buyer can borrow or lend (the *notional amount*). Rate increases and declines are measured using a *reference rate*, which is typically a well-known interest rate index, such as LIBOR. There is also an option expiration date, or *expiry date*, after which the option is cancelled. The buyer can specify the exact terms needed to hedge an interest rate position with a customized option.

If an option buyer wants to be protected from increases in interest rates, a *cap* (or ceiling) is created. A cap is a consecutive series of options, all having the same strike price. The buyer of a cap is paid whenever the reference rate exceeds the cap strike price on an option expiry date. For example, if a company wants to hedge its interest risk for one year with a strike price of 6.50%, beginning on January 1, it can buy the following options:

Desired Coverage Period	Option Number	Expiry Date	Option Term	Strike Price
January - March	--	Not applicable*	Not available*	N/A*
April - June	1	April 1	4 to 6 months	6.50%
July – September	2	July 1	7 to 9 months	6.50%
October - December	3	October 1	10 to 12 months	6.50%

* There is no option available for the first three-month period, since the expiry date is at the beginning of the contract period; the expiry date would be reached immediately.

With a cap arrangement, the buyer is only subject to interest rate changes up to the cap, and is protected from rate changes above the cap if the reference rate exceeds the cap strike price on predetermined dates. If the reference interest rate is below the cap at the option expiration, the option

buyer lets the option expire. However, if the reference rate is above the cap, the buyer exercises the option, which means that the option seller must reimburse the buyer for the difference between the reference rate and the cap rate, multiplied by the notional amount of the contract.

A cap may be included in a loan agreement, such that the borrower is guaranteed not to pay more than a designated maximum interest rate over the term of the loan, or for a predetermined portion of the loan. In this case, the lender has paid for the cap, and will probably include its cost in the interest rate or fees associated with the loan.

If a treasurer wants to be protected from decreases in interest rates (for invested funds), a *floor* is structured into an option, so that the option buyer is paid if the reference rate declines below the floor strike rate.

EXAMPLE

Suture Corporation has a $25 million 3-month loan that currently carries a fixed interest rate of 7.00%. Suture's bank refuses to grant a fixed-rate loan for a longer time period, so Suture plans to continually roll over the loan every three months. Recently, short-term interest rates have been spiking, so the treasurer decides to purchase an interest rate cap that is set at 7.50%, and which is comprised of two consecutive options, each with a three-month term.

At the expiry date of the first option, the reference rate is 7.25%, which is below the cap strike rate. The treasurer lets the option expire unused and rolls over the short-term loan at the new 7.25% rate.

At the next option expiry date, the reference rate has risen to 7.75%, which is 0.25% above the cap strike rate. The treasurer exercises the option, which forces the counterparty to pay Suture for the difference between the cap strike rate and the reference rate. The calculation of the amount to be reimbursed is:

(Reference rate – Strike rate) × (Lending period/360 days) × Notional amount = Profit or loss

or

(7.75% - 7.50%) × (90/360) × $25 million = $15,625

Of course, the cost of the option reduces the benefits gained from an interest rate option, but still is useful for providing protection from outsized changes in interest rates.

Tip: From an analysis perspective, it is useful to include the premium on an option with the amount of interest paid on a loan and any proceeds or payments associated with an exercised option, in order to derive the aggregate interest rate on any associated debt being hedged.

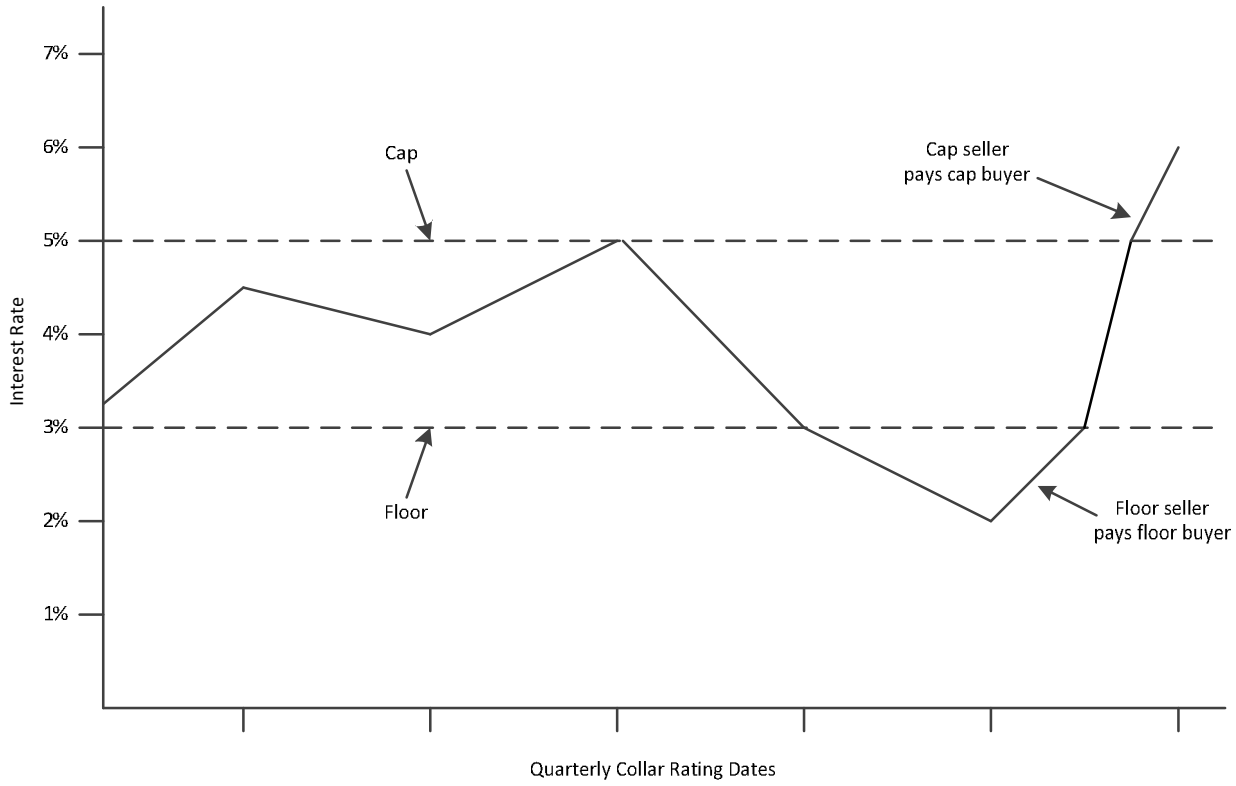
The cylinder option described in the Foreign Exchange chapter can also be applied to interest rates. Under this concept, a company purchases a cap and sells a floor, with the current reference rate located between the two strike rates. The gain from exercising one option is used to partially offset the cost of the other option, which reduces the overall cost of the hedge. The three possible outcomes to this *collar* arrangement are:

1. The reference rate remains between the cap and floor, so neither option is exercised.
2. The reference rate rises above the cap, so the company is paid for the difference between the reference rate and the cap strike rate, multiplied by the notional amount of the contract.
3. The reference rate falls below the floor, so the company pays the option counterparty for the difference between the reference rate and the floor strike rate, multiplied by the notional amount of the contract.

The functioning of a collar arrangement is shown in the following exhibit, where the cap is set at 5% and the floor is set at 3%. No option is triggered until the reference rate drops to 2% in one of the later

quarters, and again when it rises to 6%. In the first case, the company pays the 1% difference between the 3% floor and the 2% reference rate. In the latter case, the company is paid the 1% difference between the 5% cap and the 6% reference rate.

The Operation of an Interest Rate Collar



From the perspective of a company using a collar arrangement, the net effect is that interest rates will fluctuate only within the bounds set by the cap and floor strike rates.

A variation on the interest rate option concept is to include a call feature in a debt issuance. A call feature allows a company to buy back its debt from debt holders. The feature is quite useful in cases where the market interest rate has fallen since debt was issued, so a company can refinance its debt at a lower interest rate. However, the presence of the call option makes investors wary about buying it, which tends to increase the effective interest rate at which they will buy the debt. Investor concerns can be mitigated to some extent by providing for a fairly long time period before the issuing company can trigger the call option, and especially if the call price is set somewhat higher than the current market price.

Interest Rate Swaptions

A swaption is an option on an interest rate swap arrangement. The buyer of a swaption has the right, but not the obligation, to enter into an interest rate swap. In essence, a swaption presents the option of being able to lock in a fixed interest rate or a variable interest rate (depending on the terms of the underlying swap arrangement). Thus, a treasurer may suspect that interest rates will begin to rise in the near future, and so enters into a swaption to take over a fixed interest rate. If interest rates do indeed rise, the swaption holder can exercise the swaption. If interest rates hold steady or decline, the swaption is allowed to expire without being exercised.

The two types of swaption are the *payer swaption* and the *receiver swaption*, which are defined as follows:

- **Payer swaption.** The buyer can enter into a swap where it pays the fixed interest rate side of the transaction.
- **Receiver swaption.** The buyer can enter into a swap where it pays the floating interest rate side of the transaction.

There is no formal exchange for swaptions, so each agreement is between two counterparties. This means that each party is exposed to the potential failure of the counterparty to make scheduled payments on the underlying swap. Consequently, it is prudent to only enter into these arrangements with counterparties with high credit ratings or other evidence of financial stability.

Swaption market participants are primarily large corporations, banks, and hedge funds. The most likely counterparty for a corporation is a large bank that has a group specializing in swaption arrangements.

Accounting for Interest Rate Hedges

A *cash flow hedge* is a transaction entered into with the intent of offsetting the variability of cash flows. A cash flow hedge can be used to hedge against the risk of variations in future interest rates. All of the hedging instruments noted earlier in this chapter can be considered cash flow hedges, so this section focuses on the accounting for a cash flow hedge.

A properly documented hedge allows a business to record interim changes in value in other comprehensive income, rather than in earnings, until such time as the underlying transaction has been completed.

Before dealing with cash flow hedge accounting, we must first address the concept of *hedge effectiveness*. Hedge effectiveness is the proportion of the change in the cash flows of a hedged item that are offset by opposing variations in the cash flows of a designated hedging instrument.

When there is a cash flow hedge of an interest rate position and the interest rate changes, the change should be accounted for in the following way:

- Recognize in current earnings any hedge ineffectiveness
- Recognize in other comprehensive income the gain or loss on the hedging instrument
- When the hedged forecasted transaction impacts earnings, reclassify the amounts recorded in other comprehensive income to earnings

There are documentation requirements that must be met when establishing a hedge. The documentation must include a description of the hedging relationship, the company's risk management objective, and how this relates to use of the hedge. If this documentation is not completed at the beginning of a hedging transaction, then all subsequent changes in value must be recorded in earnings at once.

Tip: If a hedge does not prove to be effective in offsetting changes in the item being hedged, the hedge no longer qualifies for hedge accounting.

EXAMPLE

Suture Corporation borrows $10 million on January 1, to be repaid with a balloon payment of $10 million on December 31 of the same year. The interest rate on the loan is LIBOR plus 2.0%, and is to be paid semi-annually. LIBOR on January 1 is 4.50%, so the initial interest rate on the loan is 6.50%. The treasurer of Suture is concerned that interest rates will increase during the borrowing period, and so enters into an interest rate swap with 3rd National Bank on the same day. Under the terms of the swap, Suture pays a fixed interest rate of 6.80% semi-annually for one year, while 3rd National takes over the variable interest payments of Suture. The notional amount of the swap arrangement is $10 million. Suture's cost of capital is 7%.

The swap arrangement qualifies as a cash flow hedge.

On June 30, the interest paid for the first six months of the loan is based on the initial 6.50% interest rate, so Suture records the following entry for a half-year of interest at 6.50% for a $10 million loan:

	Debit	Credit
Interest expense	325,000	
Cash		325,000

In addition, Suture also pays the net difference in the swapped interest rates of 0.3% on the notional contract amount of $10 million for the same six-month period. The entry is:

	Debit	Credit
Interest expense	15,000	
Cash		15,000

On June 30, the reference LIBOR rate adjusts upward to 5.50%, which means that the interest rate on Suture's loan will now be 7.50% for the remaining six months of the loan period. This also means that Suture will be paid the 0.7% difference between the new 7.50% variable interest rate and the 6.80% fixed-rate amount stated in the swap agreement, with this payment being made by 3rd National on the next (and final) payment date, which is December 31. The amount of this payment will be $35,000; when discounted to its present value at Suture's 7% cost of capital for six months, the amount is approximately $33,775. The entry to record this future payment on June 30 is:

	Debit	Credit
Swap contract	33,775	
Other comprehensive income		33,775

On the loan termination date of December 31, Suture makes the following interest expense payment to the lender, based on the 7.50% interest rate that applied to the preceding six-month period:

	Debit	Credit
Interest expense	375,000	
Cash		375,000

In addition, Suture reverses its accrual of the present value of the swap contract that it recorded on June 30, and replaces it with a recordation of the cash received from 3rd National in settlement of the swap contract. As calculated earlier, the amount of this payment is $35,000.

	Debit	Credit
Other comprehensive income	33,775	
Swap contract		33,775
Cash	35,000	
Interest expense		35,000

The net undiscounted effect of the interest rate swap is a net decline in Suture's interest expense of $20,000 over the full year covered by the loan, which represents a net decline of 0.2% in the interest rate paid.

As noted in the foreign currency chapter, the accounting for hedges is complicated and paperwork-intensive, and only delays the recognition of gains or losses. If management is not concerned about more immediate recognition, or if the gains or losses are minor, it may make sense to ignore the multitude of compliance issues associated with hedge accounting. Instead, simply create hedges as needed and record gains or losses on foreign exchange holdings and hedges at once.

Chapter Summary

The costs associated with forward rate agreements, futures contracts, interest rate swaps, options, and so forth are not insignificant, and must be factored into the risk management outcomes associated with these

hedging products. In many cases, a treasurer may conclude that the gross cost of interest rate hedges is sufficiently high to deter any hedging activity. In situations where general expectations are for unusually high interest rate volatility, the cost of hedges increases even more, so that treasurers may find it impossible to engage in an active hedging program. The result may well be an ongoing program of internal risk management through the use of conservative financial structures, inter-company lending, and the matching of assets with liabilities.

Review Questions

1. Reinvestment risk involves:
    A. A change in the relationship between short-term and long-term interest rate risk
    B. An unfavorable interest rate movement when an investment is being rolled over
    C. The risk of incorrectly placing an investment order
    D. Having to invest additional funds in a subsidiary

2. A forward rate agreement:
    A. Is an agreement where both parties have the same objective
    B. Does not require a reference rate
    C. Requires that the parties also pay for the underlying principle on loans
    D. Is an agreement between two parties to lock in a specific interest rate

3. A futures contract:
    A. Cannot be acquired in a series
    B. Can be configured for many notional amounts
    C. Is traded on an exchange
    D. Is traded over the counter

4. A borrower can convert a variable-rate loan into a fixed-rate loan:
    A. With an interest rate swap
    B. With a forward rate agreement
    C. With a futures contract
    D. With a put option

5. A cap arrangement is comprised of:
    A. A consecutive series of options, all with the same strike price
    B. An interlocking set of consecutive short-term loans
    C. A collateral arrangement with a lender that guarantees a line of credit
    D. A fixed interest rate that is built into a loan

Review Answers

1. A. Incorrect. A change in the relationship between short-term and long-term interest rate risk is called yield curve risk.
   B. Correct. Reinvestment risk is the potential for an unfavorable interest rate movement when an investment is being rolled over.
   C. Incorrect. Incorrect investment paperwork is not related to reinvestment risk.
   D. Incorrect. The investment of additional funds in a subsidiary is based on the operational needs of the subsidiary, not foreign exchange issues.

2. A. Incorrect. In an FRA, one party is protecting against an increase in the interest rate, and another party is protecting against a decrease in the interest rate.
   B. Incorrect. A standard part of every FRA is a reference rate.
   C. Incorrect. An FRA does not relate to a specific loan or investment.
   D. Correct. A forward rate agreement is an agreement between two parties to lock in a specific interest rate.

3. A. Incorrect. Futures contracts can be acquired in a series to provide coverage over a long period of time.
   B. Incorrect. A futures contract cannot be configured for different notional amounts.
   C. Correct. A futures contract is traded on an exchange.
   D. Incorrect. A forward rate agreement is traded over the counter.

4. A. Correct. A variable-rate loan can be converted into a fixed-rate loan with an interest rate swap.
   B. Incorrect. A forward rate agreement can cap increases in interest rates, but does not completely flatten rates.
   C. Incorrect. A futures contract can cap increases in interest rates, but does not completely flatten rates.
   D. Incorrect. A put option only protects against declining interest rates.

5. A. Correct. A cap arrangement is a consecutive series of options, all with the same strike price.
   B. Incorrect. A set of consecutive short-term loans would likely be influenced by short-term interest rates, and so would provide no protection from interest rate variability.
   C. Incorrect. A committed line of credit is one that incorporates a collateral arrangement.
   D. Incorrect. A variable-rate loan containing a maximum interest rate provision would therefore incorporate a cap arrangement.

Chapter 15
Cash Management Controls

Learning Objectives

- Identify the minimum controls needed for cash forecasting
- Determine when to review interest income allocations
- Recognize the purpose of receipt matching
- Ascertain the purpose of using a clearing account in cash management

Introduction

The treasury function is responsible for a number of forecasting, investment, and fund raising activities, each of which requires robust controls to ensure that transactions are completed correctly. Since these are free-standing activities, we will deal with the controls for each one in a separate section. We address cash forecasting first, since the information provided by it is the foundation for the other investing and fund raising activities noted later in the chapter. We also describe cash concentration, investing and hedging activities, obtaining debt, and selling stock, along with a range of possible controls, the minimum set of allowable controls, and supporting policies.

The Cash Forecasting Controls Environment

A cash forecast is used to estimate the cash requirements of a business for the upcoming period spanning the duration of its usual investment instruments and short-term debt. A comprehensive cash forecast can be an elaborate undertaking, since it requires inputs regarding the following cash-related issues:

Input to Cash Forecast	Source
Expected cash receipts from customer billings	Collections manager
Expected cash receipts from the sale of assets	Controller
Expected cash receipts from gains on invested funds	Treasury department
Expected cash outflow for payroll payments	Payroll manager
Expected cash outflow for supplier payments	Accounts payable manager
Expected cash outflow for interest expense	Treasury department
Expected cash outflow for dividend payments	Corporate secretary
Expected cash outflow for acquisitions	Acquisitions department
Expected cash outflow for fixed asset purchases	Controller
Expected cash outflow for tax payments	Tax manager

There are clearly many systems from which information must be drawn, which makes it difficult to consistently create an accurate forecast. The following controls are useful for improving the accuracy of the forecast:

- **Use a cash forecast checklist.** If the cash forecast is updated at fairly long intervals, or if responsibility for preparing it is shifted among several people, it is possible that some elements of the forecast will be inadvertently excluded from time to time. This risk can be mitigated by enforcing the use of a standard checklist of actions to take when constructing the forecast.
- **Verify the accuracy of cash forecasts.** It is impossible to have an investment strategy if the cash forecasting system is inaccurate. Consequently, the treasurer should routinely compare the actual cash position to what had been forecasted, and adjust the forecasting model accordingly.
- **Obtain additional cash forecast reviews.** If there is a great deal of investment reliance on the cash forecast, consider having several people review the forecast. For example, the collections

manager can provide the best estimates of cash receipts, while the accounts payable manager and payroll manager have the best insights into expected cash disbursements.

- **The corporate secretary warns the treasurer of approved dividends.** The board of directors must authorize dividends, so any such authorizations will be documented in the board minutes by the corporate secretary. The treasurer should be on the standard mailing list for board minutes, so that he will be made aware of any dividends that should be incorporated into the cash forecast.
- **The treasurer is informed of capital purchase plans.** The treasurer should be made aware of all changes to the capital budget, and in particular of all short-notice purchases of fixed assets, since these acquisitions can have a considerable negative impact on the cash forecast.
- **The treasurer is informed of acquisition discussions.** An acquisition can be the largest use of cash that a company ever experiences, so the treasurer should be brought into all discussions regarding possible acquisitions and the amounts to be paid in cash. Reasonably probable acquisitions should be factored into the cash forecast.

The minimum set of controls likely to be needed for a cash forecasting system are:

- Use a cash forecast checklist
- Verify the accuracy of cash forecasts

These two controls are sufficient for the day-to-day maintenance of a cash forecast model that is well-established, and which experiences few unexpected changes over time. As the business environment becomes more volatile, the other controls should be added to maintain a high level of forecasting accuracy.

The cash forecast stands at the center of many decisions made by the treasury department, so it must be not only as accurate as possible, but also updated frequently enough to provide reliable forecasts to the treasury staff. The following policies address these issues:

- **A cash forecast shall be used as the basis for funds planning.** It is impossible to invest funds in longer-term investments without a reliable cash forecast. Otherwise, the treasurer is forced to invest solely in very short-term investments that usually carry lower interest rates. Conversely, there is great risk in placing funds in longer-term investments without the foreknowledge provided by a quality cash forecast.
- **A new cash forecast shall be issued on at least a [time period] basis.** The treasury staff should be required to issue cash forecasts with great regularity. This policy sets the minimum interval for issuing new forecasts.
- **The construction of the cash forecast shall be examined annually.** The spreadsheet used to construct a cash forecast may become outdated as a business changes, so there should be a mandatory examination of the spreadsheet itself, to see if it still generates an accurate forecast.

Tip: The cash forecast should also be revised when the company is restructured, such as when there is a divestiture or acquisition.

The Cash Concentration Control Environment

In a cash concentration system, cash is channeled from a number of accounts into a single account from which it is invested. It is worthwhile to periodically review several aspects of a cash concentration system in order to maintain control over the sources of cash and the related intercompany loans that arise from the system. Consider implementing the following controls:

- **Verify account exclusions.** When the cash concentration system was initially being created, it may not have been cost-effective to sweep the cash from some low-balance accounts. If so, periodically review the cash balances in these accounts to see if the situation has changed. Otherwise, excess cash may linger in accounts and not generate any interest income.

- **Verify target balances.** In selected cases, a minimum cash balance may have been allowed in an account, with all excess cash being swept from the account. Since this residual cash balance is probably not earning any interest income, revisit the target balance periodically to see if it can be lowered or eliminated.
- **Review intercompany loan balances.** A company that sweeps cash from subsidiaries may record intercompany loans from the parent company to the subsidiaries in the amount of the cash being used by the parent. If so, verify that the amount of these loans is properly calculated and regularly updated. Otherwise, the amount of interest income calculated on the principal balance could be incorrect.
- **Review interest income allocations.** If the company is paying its subsidiaries interest income for the use of their cash balances, be sure to periodically review the calculation of this income and whether it has been consistently recorded, since tax auditors may periodically request this information.

The preceding cash concentration controls are all required for a cash sweeping system, where cash is physically moved into a central investment account. If notional pooling is used, cash is not physically moved, so there is no need for the formal recordation of intercompany loans. However, the control over interest income allocations is still needed in a notional system, since the income is based on cash held by subsidiaries.

The following policy is intended to keep a company from using nonmarket interest rates for any intercompany loans derived from a cash concentration system:

- **Market interest rates shall be used to calculate the interest on all intercompany loans.** By requiring the use of market interest rates, there is little risk of being questioned by some tax jurisdictions about the appropriateness of the interest income being paid into the various company subsidiaries in exchange for the use of their cash in a cash concentration system.

The Funds Investment Control Environment

The treasury staff uses the information in the cash forecast to estimate the amount of cash that it can invest, and the duration over which it can invest the funds. It is generally possible to obtain a higher rate of interest if a business is willing to invest for a longer duration, though there is a risk that the cash may be needed before the investment has matured.

Since a high-risk investment can potentially destroy the invested cash of a business, it is imperative that a strong set of controls be implemented to limit the types of investment vehicles used. Also, since investment activities involve shifting large amounts of cash outside of a business, there is some risk of fraud. The following controls address these and other issues:

- **Use standard investment guidelines.** The treasury staff should make all investments based on a standard investment policy that restricts them to certain types of investments. This reduces the chance of placing funds with an unduly risky or long-term investment vehicle.
- **Verify that the proposed investments do not exceed the period of the cash forecast.** It would be unwise to engage in any investment from which the company cannot extract itself within the term of its cash forecast. Otherwise, if cash flows decline after the latest forecasted date, the company might have to borrow funds to meet its operating needs until such time as the investment reaches its maturity date.
- **Obtain interest rate quotes.** If the company invests its short-term funds through banks, have the treasury staff complete an interest rate quote sheet on which they formally document the interest rates quoted to the company by several banks.
- **Use a standard investment authorization form.** All proposed investments should be included on a standard form that includes a required authorization signature. This provides documentation that all investments made were properly authorized.

Tip: If interest rate quotes were obtained, they should be attached to the investment authorization form as proof that the highest-return investment is being obtained within the standard investment guidelines.

- **Use workflow systems for treasury transactions.** If there is sufficient treasury volume to justify the cost, install a treasury management system that routes treasury transactions to the authorized parties for such transactions as authorizing or rolling over investments.
- **Obtain transaction receipts.** No matter what type of investment the treasury staff purchases, be sure to obtain a receipt for it, and staple the receipt to the original investment authorization form.
- **Match receipts to authorization form.** Someone not directly involved in investment activities should reconcile interest rate quotes to investment authorization forms and investment receipts, and report any unexplained variances to the treasurer.
- **Match interest rate quote to actual interest rate paid.** Someone should match the quoted interest rate to the amount actually paid by the bank, and bring variances to the attention of the treasurer.
- **Reconcile actual funds transfer transactions to authorized transactions.** Have a person not involved in funds transfers review all electronic funds transfers from the previous day, and see if any occurred that were not listed on the authorized funds transfer or investment form.

Tip: This reconciliation should take place as soon as possible each morning for the previous day's transactions, while there may still be time to reverse the transactions (though only if they are ACH transactions—wire transfers are usually settled in minutes).

- **Update valuations.** Update the recorded valuations of all investments at the end of each reporting period. Otherwise, reported investment balances may be incorrect.
- **Reconcile recorded investment balances to amounts stated by third parties.** Someone not involved in the transfer of funds should reconcile the recorded amount of cash invested to the month-end statements provided by those third parties with whom the company has invested its funds.
- **Treasurer reviews and approves all treasury-related journal entries.** The treasurer should review the justification for every transaction related to cash transfers, investment valuations, the recognition of gains and losses, and so forth, and approves the related journal entries.
- **Treasurer reviews investment ending balances and disclosures.** The treasurer should review and approve the ending valuations of investments, as well as all associated disclosures and both recognized and unrecognized gains and losses.
- **Treasurer reviews and approves financial statement disclosures.** The treasurer should review and approve all treasury-related disclosures that are included in the financial statements.
- **Verify that actual investments comply with investment limitations.** If there is a policy defining the types of investments that the company is allowed to engage in, there should be a periodic comparison of actual investments to this policy, to ensure that the treasury staff is in compliance with the policy.

There are a large number of investment-related policies that are mostly intended to restrict the range of possible investments that the treasurer is allowed to engage in. Examples of what these policies could look like are:

- **Investments shall be restricted to [investment classification].** This policy is designed to keep the treasury staff from investing funds in investments that have inordinately high levels of risk or low levels of liquidity.
- **The maximum investment maturity shall be [months].** This policy is designed to keep a company's funds as liquid as possible. Even though this policy may keep the treasurer from investing in higher-return investments, liquidity is usually considered to be a significantly more important goal to pursue.

- **At least [days of working capital] shall be invested in completely liquid investments.** This is a sample of a policy designed to ensure that an adequate proportion of a company's likely cash requirements will be stored in immediately accessible investment funds.
- **Overnight investments shall only be made with a list of approved banks.** This policy keeps the treasury staff from investing funds in banks having less robust finances.

The preceding and rather hefty set of controls may all be used in a larger treasury department that handles large investments. In smaller organizations that only purchase short-term investments from a single bank, the following minimum set of controls may be sufficient:

- Use standard investment guidelines
- Obtain transaction receipts
- Reconcile recorded investment balances to accounts stated by third parties

This vastly reduced set of controls is only possible when the treasury department is so small that the treasurer is directly engaged in most transactions, and where most investments are extremely short and liquid. In this situation, there is less need for authorizations and reconciliations.

The following two policies are intended to restrict the number of people allowed to make investments, and to reduce the risk associated with the physical handling of securities:

- **The treasurer must authorize all investment transactions and funds transfers.** This policy is designed to introduce oversight into the transfer of what may be very large amounts of cash.
- **Securities shall be stored with an independent custodian.** Investment documents should be stored with an independent custodian, so there is never any risk that someone could steal securities. In practice, this is rarely an issue.

The Foreign Exchange Hedge Control Environment

If a company has a significant exposure to fluctuations in the value of its foreign exchange holdings, it may use hedging transactions to offset that exposure. If so, it is of considerable importance to maintain a set of controls designed to ensure that this exposure is properly identified, and that hedges are correctly installed and monitored. The following controls and policies deal with these issues:

- **Match hedge transactions to authorized list.** Have the internal audit staff periodically review all hedging transactions to see if the persons who initiated them were authorized to do so. The auditors should use a treasurer-approved list of authorized employees as the basis for this analysis.
- **Review transactions prior to completion.** If a company has a history of entering into incorrect hedges, have an in-house hedging specialist review the details of all proposed hedges prior to finalization, to ensure that they are correct and meet the company's hedging objectives.
- **Confirm hedges.** Someone other than the initiator of a hedging transaction should confirm with the counterparty that the hedge is complete, and that both parties agree upon the terms of the hedge. This should involve the physical comparison of the deal terms as stated by both parties.

The following policy is designed to improve the level of control over foreign exchange transactions by centralizing them with a group of (presumably) experienced practitioners:

- **Foreign exchange trading operations shall be centralized at the parent company.** In a highly diverse business, this policy makes it easier to keep track of foreign exchange holdings and forecasted transactions, and to develop appropriate hedges for them.

There are cases where a treasurer may be tempted to enter into an over-the-counter hedging transaction with another party, rather than using an exchange. The following policy is designed to limit the number of these over-the-counter transactions:

- **Over-the-counter hedges must be approved in advance by the CFO.** There is a risk that the counterparty in an over-the-counter transaction will not fulfill its obligations under a hedge, resulting in a loss for the company. This policy is designed to limit the number of such transactions.

A policy that can be of use where there are large foreign exchange positions is a requirement to periodically stress-test a company's hedging strategy, as shown below:

- **The company's foreign exchange hedging strategy shall be stress-tested at least quarterly to determine losses under various hedging scenarios.** This policy mandates that the treasury staff periodically create a stress model that calculates the company's worst-case losses, based on its existing hedging strategy. The concept can be expanded further, to incorporate alternative hedging strategies and their projected results. The outcome of this analysis may be adjustments to the corporate hedging strategy to mitigate possible losses.

The following policy can be of use in providing specific guidance to the treasurer in regard to the amount of hedging that the department must engage in:

- **The benchmark hedge ratio shall be no less than __% for booked exposures and __% for forecasted exposures.** This policy sets specific hedging targets, which may be close to 100% for booked exposures and considerably less for forecasted exposures. The forecasted exposure target is lower, since it is difficult to estimate the amount of these more distant cash flows.

The Debt Procurement Control Environment

There are situations where there is so little cash on hand that the treasury staff is more concerned with obtaining debt than with investing excess funds. This may involve sending an authorization to the company's bank to draw down a line of credit, or arranging for a more formal long-term lending arrangement.

When there is a line of credit, the key control issues are that the treasurer be kept aware of the remaining available amount of unused debt, and that the amount of debt recorded on the company's books matches the amount recorded by the lender. These and other controls are as follows:

- **Treasurer approves line of credit drawdowns and repayments.** The treasurer should sign off on all changes in the company's line of credit.

> **Tip:** There should be a close linkage between maintenance of the cash forecast and expected debt changes, since these changes can have a considerable impact on the amount of cash available for investments.

- **Reconcile loan statement to general ledger balance.** The treasury or accounting staff should reconcile any differences between the company's record of a loan balance and the loan balance indicated by the lender.
- **Compare collateral requirements.** The treasurer or corporate counsel should compare the terms of all debt agreements to see if the company has conflicting collateral requirements. It is entirely possible that more than one lender can claim the same assets as collateral. This is not a minor issue, since some lenders have been known to terminate loan agreements because of conflicting collateral obligations.
- **The board of directors approves new loans or bonds.** Board minutes signed by the company secretary should state that the board of directors has formally approved of the issuance of loans or sale of bonds.
- **Report debt levels and terms to the board of directors.** Periodically report to the board of directors the amount of all debt outstanding, interest rates being paid, how long before the agreements terminate, and the prospects for renewal. The board needs to know if there is a prospect for having a sudden cash shortfall caused by a called loan or debt nonrenewal, so do not treat this control lightly.

In the typical small-company environment where there are perhaps one or two long-term loans and a line of credit, only the following two controls need to be rigorously followed:

- Treasurer approves line of credit drawdowns and repayments
- Reconcile loan statement to general ledger balance

The following policy is designed to reduce the cost of debt:

- **The company shall retire its debt and replace it with lower-cost debt whenever the market interest rate and the current debt terms make this feasible.** This requirement to reduce the cost of debt may appear cost-effective, but is realistically only useful when the terms of the existing debt agreement allow a company to retire its debt prior to the termination date.

The Stock Issuance Control Environment

Of all the fund raising activities that a company engages in, the issuance of stock requires the most in-depth range of controls. There are significant liabilities associated with the incorrect issuance of stock certificates, so *all* of the following controls should be followed; there is no recommended reduced set of controls:

- **Verify that there are sufficient authorized shares.** There must first be a sufficient number of authorized shares available to sell. It can require shareholder approval to increase the number of authorized shares, so this is not a minor matter.

> **Tip:** There should be sufficient authorized shares available for the proposed stock sale *after* including the conversion effects of all outstanding warrants and stock options.

- **The board of directors approves the sale of all stock.** Board minutes signed by the company secretary should state that the board of directors has formally approved of the sale of stock.
- **Obtain accredited investor letter.** If the company is selling unregistered stock, it should first obtain from all purchasing individuals a letter stating that they are accredited investors.
- **Issue stock through a stock transfer agent.** There should never be any blank company stock certificates held on-site. Instead, hire a stock transfer agent to issue shares to shareholders at the direction of the corporate secretary.
- **Use a formal letter of direction to issue stock.** The stock transfer agent should be instructed to only issue stock as per the direction of the corporate secretary, who must sign a letter of direction that states the specifics of each share certificate to be issued.

> **Tip:** The stock transfer agent should have a copy on file of the corporate secretary's signature, which it uses to validate all letters of direction received from the company.

- **Reconcile cash received to letters of direction.** The treasurer should verify that a letter of direction has been issued that corresponds to cash received from investors to purchase stock.
- **Reconcile shareholder list to letters of direction.** The treasurer should periodically request a shareholder list from the stock transfer agent, and match changes in it to copies of the letters of direction previously sent to authorize the issuance of stock.

> **Tip:** This control will not always work if some stock is registered with the Securities and Exchange Commission, for stockholders can then place their shares with a broker, whose name will appear in their place in the records of the stock transfer agent.

- **Audit shareholder list.** The internal audit staff should verify that the number of shares outstanding, as supplied by the stock transfer agent, matches the company's internal shareholder list.

The custody and tracking of stock certificates is an important area, since someone could fraudulently earn a large amount by gaining access to a company's stock certificates and then selling them. The following control addresses this problem.

- **Stock certificates shall be issued by a stock transfer agent.** This policy is designed to shift the custody of all blank stock certificates to a third party custodian.
- **All unregistered stock sold shall contain a restrictive legend.** This policy is designed to restrict the ability of the buyers of a company's unregistered stock to sell their shares until various regulations promulgated by the Securities and Exchange Commission have been met.

Additional Cash Management Controls – Fraud Related

There is a reasonable chance that fraud will occur in the cash management area. Accordingly, consider implementing the following controls to prevent or at least detect fraud:

- **Separation of duties.** The person who initiates a funds transfer cannot release or validate the transaction. This is a critical control, since someone could otherwise single-handedly shift large amounts of cash out of a business.

  Tip: If the treasury department is small, have the chief executive officer or chief financial officer release or validate the transfer of funds. This brings cash transfers to the attention of senior management.

- **Restrict use of authenticated computers.** A bank typically authenticates the security certificate associated with a particular computer, and then requires a company to initiate ACH and wiring instructions from that computer. If a third party can gain access to that computer, they can authorize funds transfers out of the company's bank account. This issue can be combatted by severely locking down use of the authenticated computer. This means that it is not used for web browsing or for e-mail downloads, or any other activities by which someone could insert keystroke logging software onto the computer, and then use the resulting information to hack into and use the computer from a remote location.

  Tip: While all computers should be protected with a firewall and antivirus software, this is especially important for the computer used to initiate wire transfers.

- **Use a clearing account.** Arrange with the bank to only allow wire transfers and ACH transactions from a designated clearing account. Then fund this account with only sufficient funds to cover all transactions. Thus, the clearing account requires that someone fraudulently move funds into the clearing account before they can send them outside of the company. The two-step nature of the transaction makes it more difficult to commit fraud.

Chapter Summary

The controls for several cash-related activities were described in this chapter—cash forecasting, investing funds, hedging, obtaining debt, and selling stock. All of these activities are based on the accuracy of the cash forecast, so it is imperative that there be a well-organized system in place for deriving the forecast, as well as a system for investigating variances between forecasted and actual results. Without an accurate cash forecasting system, the entire cash management function is rendered far less effective.

In addition to cash forecasting issues, a company should pay particular attention to its controls over investments. It is possible for someone to fraudulently transfer all of a company's cash to a distant bank account from which there is no hope of recovery. Thus, even if the probability of such an event is low, the risk of loss is so massively high that it is mandatory to position controls to prevent this type of fraud.

Review Questions

1. The corporate secretary is involved in cash forecasting because:
    A. This person records lawsuit notifications
    B. This person manages the employee stock purchase program
    C. This person documents the authorization to issue dividends
    D. This person monitors payments made to retirees

2. The verification of account exclusions is used when dealing with:
    A. General ledger updates
    B. Foreign currency hedging
    C. Cash concentration systems
    D. Notional pooling systems

3. An investment should not be made under which of the following circumstances?
    A. An interest rate quote sheet has been completed
    B. An investment authorization form has been completed
    C. A proposed investment exceeds the cash forecast period
    D. A proposed investment falls within the corporate investment guidelines

4. An investment policy usually does not include:
    A. A restriction on the types of investments allowed
    B. Required reconciliation of investment documentation
    C. The maximum investment maturity
    D. The use of approved counterparties

5. As part of the initial share issuance process, it is not necessary to:
    A. Verify that there are a sufficient number of authorized shares available
    B. Verify that the board of directors has approved the issuance of shares
    C. Send a formal letter of direction to the stock transfer agent
    D. Audit the shareholder list

Review Answers

1. A. Incorrect. Corporate counsel is involved with lawsuit notifications.
   B. Incorrect. Other departments are more likely to manage the employee stock purchase program.
   C. **Correct.** The secretary notifies the treasury staff of any dividends to be issued.
   D. Incorrect. The human resources staff monitors payments made to retirees.

2. A. Incorrect. A standard set of general ledger cash accounts will probably be used over the long term.
   B. Incorrect. Account exclusions are not relevant to hedging activities.
   C. **Correct.** Accounts previously excluded from a cash concentration system should be periodically reviewed to see if this should still be the case.
   D. Incorrect. Notional pooling does not involve the transfer of cash, so all accounts should be included in a notional pooling system.

3. A. Incorrect. The completion of an interest rate quote sheet is a valid precursor to making an investment.
   B. Incorrect. The completion of an investment authorization form is a valid precursor to making an investment.
   C. **Correct.** An investment should not be made if it exceeds the cash forecast period, since the related amount of cash might be needed before the maturity date of the investment.
   D. Incorrect. Compliance with the corporate investment guidelines is a valid precursor to making an investment.

4. A. Incorrect. A restriction on the types of investments allowed is a reasonable investment policy.
   B. **Correct.** The reconciliation of investment documentation is a control, not a policy.
   C. Incorrect. A stated maximum period for investment maturity is a reasonable investment policy.
   D. Incorrect. The used of only approved counterparties is a reasonable investment policy.

5. A. Incorrect. Prior to issuing shares, always verify that there are a sufficient number of authorized shares available.
   B. Incorrect. Prior to issuing shares, verify that the issuance has been approved by the board of directors.
   C. Incorrect. Part of share issuance involves sending a letter of direction to the stock transfer agent.
   D. **Correct.** Auditing the shareholder list takes place after the initial share issuance process.

Chapter 16
Cash Management Metrics

Learning Objectives

- Recognize general areas in which a cash manager would need to install metrics
- Calculate days' sales in accounts receivable for a given example
- Identify what is included in the calculation of earnings on invested funds

Introduction

The treasury department functions outside of the normal operational part of a company, where goods are produced and sold. Most measurements are designed to monitor the performance of these other operational areas, since that is where most company profits and losses are generated. Nonetheless, the treasury group and specifically its cash management function should be monitored with a small group of metrics. By doing so, the treasurer can gain insights into where and for how long cash is used within a company, how well the treasury staff can predict cash flows, the earnings generated on invested funds, and similar matters. In this chapter, we describe a variety of cash management metrics that can be of considerable use to the treasurer.

Cash Management Metrics

At first glance, the cash management area might appear resistant to the use of any ongoing, standardized metrics to measure its performance. After all, we are merely finding a home for excess cash and ensuring that sufficient funding is available when cash runs short. In reality, there are a number of areas in which metrics can be profitably employed. Consider the following conceptual areas for measurement:

- **Cash usage.** In what parts of the company is cash currently being used? The entire management team should be aware of which areas are using and providing cash, thereby engendering a discussion of how cash usage can be improved.
- **Cash application.** How well is the staff applying cash to accounts receivable? If this effort is inaccurate or delayed, no one will know which customers still owe money to the company.
- **Cash forecasting.** The treasurer needs to know how well future projections of cash positions are matching actual outcomes, as well as how much lending capability the company has remaining on its borrowing base.
- **Cash at work.** The treasurer should be fully informed of those pockets of cash not being put to good use earning income for the business, as well as the extent of the returns on invested funds.
- **Cash at risk.** If the company has extensive positions in foreign currencies, there should be a measurement system in place that tracks unhedged gains and losses on those positions, thereby clarifying the extent of the risk to which the company is subjected.

In short, there are a number of areas in which metrics can provide valuable information for the cash management function. In the following sections, we discuss specific metrics that address all of the conceptual areas just noted.

Cash Conversion Cycle

The cash conversion cycle is the time period extending from the payment of cash for the production of goods, until cash is received from the sale of those goods to customers. The activities involved in the cash conversion cycle include the purchasing of raw materials or items to be resold, their storage, the

production process, payments to employees related to the production process, and the sale of goods to customers. If a company only provides services, then the cash conversion cycle extends from the date of payments to employees to the receipt of cash from the sale of services to customers. The cash conversion cycle tends to be much shorter for the provision of services.

It is important to know the duration of the cash conversion cycle, for this is the time period over which cash is invested in a business. If the conversion cycle can be shortened, then cash can be permanently extracted from the business and made available for other purposes. The steps in the cash conversion cycle that can potentially be compressed include:

- The placement of orders for goods with suppliers
- The time required for goods to be delivered to the company
- The time required to inspect and log in received goods
- The inventory holding period
- The duration of the production process
- The time required to prepare goods for shipment
- The delay incorporated into payment terms with customers
- The time required to collect overdue accounts receivable

The cash conversion cycle can be severely compressed through the use of a just-in-time "pull" system that only produces goods just as they are needed for immediate sale to customers. Many other methods for compressing the cash conversion cycle are noted in the Working Capital Enhancements chapter.

To calculate the amount of the cash conversion cycle, add together the days of sales in accounts receivable and the days of sales in inventory, and subtract the days of payables outstanding. For example, a company has 60 days of sales in accounts receivable, 80 days of sales in inventory, and 30 days of payables outstanding. Its cash conversion cycle is therefore:

60 Days receivables + 80 Days inventory – 30 Days payables
= 110 Days cash conversion cycle

The calculations for days of sales in accounts receivable, days of sales in inventory, and days payables outstanding are explained in the next three sub-sections.

Days Sales in Accounts Receivable

Days sales in accounts receivable is the number of days tha t a customer invoice is outstanding before it is collected. The measurement is usually applied to the entire set of invoices that a company has outstanding at any point in time, rather than to a single invoice. The point of the measurement is to determine the effectiveness of a company's credit and collection efforts in allowing credit to reputable customers, as well as its ability to collect from them. When measured at the individual customer level, it can indicate when a customer is having cash flow troubles, since the customer will attempt to stretch out the amount of time before it pays invoices.

There is not an absolute number of accounts receivable days that represents excellent or poor accounts receivable management, since the figure varies considerably by industry and the underlying payment terms. Generally, a figure of 25% more than the standard terms allowed may represent an opportunity for improvement. Conversely, an accounts receivable days figure that is very close to the payment terms granted to a customer probably indicates that a company's credit policy is too tight.

The formula for accounts receivable days is:

(Accounts receivable ÷ Annual revenue) × Number of days in the year

For example, if a company has an average accounts receivable balance of $200,000 and annual sales of $1,200,000, then its accounts receivable days figure is:

($200,000 Accounts receivable ÷ $1,200,000 Annual revenue) × 365 Days
= 60.8 Accounts receivable days

The calculation indicates that the company requires 60.8 days to collect a typical invoice.

An effective way to use the accounts receivable days measurement is to track it on a trend line, month by month. Doing so shows any changes in the ability of the company to collect from its customers. If a business is highly seasonal, a variation is to compare the measurement to the same metric for the same month in the preceding year; this provides a more reasonable basis for comparison.

No matter how this measurement is used, remember that it is usually compiled from a large number of outstanding invoices, and so provides no insights into the collectability of a specific invoice. Thus, you should supplement it with an ongoing examination of the aged accounts receivable report and the notes of the collection staff.

Days Sales in Inventory

Days sales in inventory (DSI) is a way to measure the average amount of time that it takes for a company to convert its inventory into sales. A relatively small number of days sales in inventory indicates that a company is more efficient in selling off its inventory, while a large number indicates that a company may have invested too much in inventory, and may even have obsolete inventory on hand.

To calculate days sales in inventory, divide the average inventory for the year by the cost of goods sold for the same period, and then multiply by 365. For example, if a company has average inventory of $1.5 million and an annual cost of goods sold of $6 million, then its days sales in inventory is calculated as:

= ($1.5 million inventory ÷ $6 million cost of goods sold) × 365 days
= 91.3 days sales in inventory

The days sales in inventory figure can be misleading, for the following reasons:

- A company could post financial results that indicate a low DSI, but only because it has sold off a large amount of inventory at a discount, or has written off some inventory as obsolete. An indicator of these actions is when profits decline at the same time that the number of days sales in inventory declines.
- A company could change its method for calculating the cost of goods sold, such as by capitalizing more or fewer expenses into overhead. If this calculation method varies significantly from the method the company used in the past, it can lead to a sudden alteration in the results of the measurement.
- The person creating the metrics might use the amount of ending inventory in the numerator, rather than the average inventory figure for the entire measurement period. If the ending inventory figure varies significantly from the average inventory figure, this can result in a sharp change in the measurement.
- A company may switch to contract manufacturing, where a supplier produces and holds goods on behalf of the company. Depending upon the arrangement, the company may have no inventory to report at all, which renders the DSI measurement useless.

Days Payables Outstanding

The accounts payable days formula measures the number of days that a company takes to pay its suppliers. If the number of days increases from one period to the next, this indicates that the company is paying its suppliers more slowly. A change in the number of payable days can also indicate altered payment terms with suppliers, though this rarely has more than a slight impact on the total number of days. If a company is paying its suppliers very quickly, it may mean that the suppliers are demanding short payment terms.

To calculate days payables outstanding, summarize all purchases from suppliers during the measurement period, and divide by the average amount of accounts payable during that period. The formula is:

$$\frac{\text{Total supplier purchases}}{(\text{Beginning accounts payable} + \text{Ending accounts payable}) \div 2}$$

This formula reveals the total accounts payable turnover. Then divide the resulting turnover figure into 365 days to arrive at the number of accounts payable days.

The formula can be modified to exclude cash payments to suppliers, since the numerator should include only purchases on credit from suppliers. However, the amount of up-front cash payments to suppliers is normally so small that this modification is not necessary.

As an example, a treasurer wants to determine his company's accounts payable days for the past year. In the beginning of this period, the beginning accounts payable balance was $800,000, and the ending balance was $884,000. Purchases for the last 12 months were $7,500,000. Based on this information, the treasurer calculates the accounts payable turnover as:

$$\frac{\$7{,}500{,}000 \text{ Purchases}}{(\$800{,}000 \text{ Beginning payables} + \$884{,}000 \text{ Ending payables}) \div 2}$$

$$= \$7{,}500{,}000 \text{ Purchases} \div \$842{,}000 \text{ Average accounts payable}$$

$$= 8.9 \text{ Accounts payable turnover}$$

Thus, the company's accounts payable is turning over at a rate of 8.9 times per year. To calculate the turnover in days, the treasurer divides the 8.9 turns into 365 days, which yields:

$$365 \text{ Days} \div 8.9 \text{ Turns} = 41 \text{ Days}$$

Companies sometimes measure accounts payable days by only using the cost of goods sold in the numerator. This is incorrect, since there may be a large amount of administrative expenses that should also be included. If a company only uses the cost of goods sold in the numerator, this creates an excessively small number of payable days.

Fixed Asset Turnover Ratio

The fixed asset turnover ratio is the ratio of net sales to net fixed assets. A high ratio indicates that a company is doing an effective job of generating sales with a relatively small amount of fixed assets. Conversely, if the ratio is declining over time, the company has either overinvested in fixed assets or it needs to issue new products to revive its sales. Another possible effect is for a company to make a large investment in fixed assets, with a time delay of several months to a year before the new assets start generating revenues.

The formula for the fixed asset turnover ratio is to subtract accumulated depreciation from gross fixed assets, and divide into net annual sales. It may be necessary to obtain an average fixed asset figure, if the amount varies significantly over time. Do not include intangible assets in the denominator, since it can skew the results. The formula is:

$$\frac{\text{Net annual sales}}{\text{Gross fixed assets} - \text{Accumulated depreciation}}$$

For example, a company has gross fixed assets of $5,000,000 and accumulated depreciation of $2,000,000. Sales over the last 12 months totaled $9,000,000. The calculation of its fixed asset turnover ratio is:

$$\frac{\$9{,}000{,}000 \text{ Net sales}}{\$5{,}000{,}000 \text{ Gross fixed assets} - \$2{,}000{,}000 \text{ Accumulated depreciation}}$$

$$= 3.0 \text{ Turnover per year}$$

The fixed asset turnover ratio is most useful in "heavy industry," such as automobile manufacturing, where a large capital investment is required in order to do business. In other industries, such as software development, the fixed asset investment is so meager that the ratio is not of much use.

A potential problem with this ratio may arise if a company uses accelerated depreciation, such as the double declining balance method, since this artificially reduces the amount of net fixed assets in the denominator of the calculation, and makes turnover appear higher than it really should be.

Another issue is that ongoing depreciation will inevitably reduce the amount of the denominator, so the turnover ratio will rise over time, unless a company is investing an equivalent amount in new fixed assets to replace older ones.

Auto Cash Application Rate

In a larger organization that has many cash receipts from customers, it can be cost-effective to install a system that automatically sorts through the various receipts and applies them to open accounts receivable. This is of considerable use to the cash management function, since cash appears in the accounting system more quickly than would be the case with a manual application process. These "auto cash" systems are not very effective initially, based on the generic application logic provided by the system supplier. As a result, many cash receipts are rejected, and must be manually applied to open receivables. However, fine-tuning the system with additional cash application logic for each individual customer will gradually improve the auto cash application rate, to the point where very few cash receipts require manual processing. Thus, continuing attention to the application rate of such a system is of some importance from the perspective of cash management.

To calculate the auto cash application rate, divide the number of check payments automatically applied by the auto cash system by the total number of check payments received. All up-front payments received (i.e., not involving receivables) should not be included in the measurement. The ratio is:

$$\frac{\text{Number of check payments automatically applied in full}}{\text{Total number of check payments received}}$$

Consider running this measurement every day during the early stages of an auto cash installation. This is needed to focus attention on the constant updating of system logic to accommodate the payment foibles of individual customers. Once a high application rate has been achieved, the measurement frequency can be reduced.

EXAMPLE

Cud Farms bills its thousands of retail customers once a week for milk deliveries, and is usually paid by check about one week later. Cud installs an auto cash system to handle this incoming blizzard of payments. The treasury department tracks the performance of the system using the auto cash application rate. In the first week, auto cash applications were made for 5,100 out of 8,300 check receipts. A month later, the rate is 5,350 applications out of 8,900 check receipts. The target application rate advertised by the auto cash system provider is 80%. Since the initial application rate was 61% and the following rate was 60%, Cud is clearly not going to achieve the target rate without additional assistance from the system provider.

Suspense to Receivables Ratio

When payments are received from customers, some are so poorly documented that it can be quite difficult to apply them to open accounts receivable. To ensure that these payments are at least recorded *somewhere* in the accounting system, they are assigned to a suspense account. By doing so, the cash balance is

increased by the amount of these payments, even if no specific receivable accounts are impacted. However, this means that the cash management staff cannot determine the accuracy of its cash forecasts, since it does not know which customers have submitted payments. Thus, there is a need to resolve the contents of the suspense account as soon as possible.

The suspense account can be a quagmire of old and poorly-documented receipts, and so tends to be avoided by the accounting staff. To focus attention on this area, consider measuring the suspense to receivables ratio, which is a simple comparison of the total balance in the suspense account to the total amount of trade receivables. The ratio is:

$$\frac{\text{Suspense account balance}}{\text{Trade accounts receivable balance}}$$

The main problem with this measurement is that the suspense account may be relatively small in comparison to the total balance of trade receivables, so the resulting ratio may not generate much attention from the controller. There are two variations on the concept that might trigger more vigorous attention:

- Use only the overdue receivables balance in the denominator of the ratio, since this is probably the group of receivables related to the payments stored in the suspense account. Since the denominator will be smaller, the suspense account balance will appear comparatively larger.
- Track the average age of the payments stored in the suspense account, rather than the suspense to receivables ratio. Many older payments will be more likely to trigger additional clerical support.

EXAMPLE

Colossal Furniture hired a relatively inexperienced cash receipts clerk one year ago, and the treasury staff is complaining that it can no longer accurately track cash receipts against its cash forecast, since so many payments are sitting in the suspense account. To verify this allegation, the controller assembles the following information about the contents of the suspense account from just before the clerk was hired and from the preceding day:

	Suspense Account Balance	Total Receivables > 30 Days	Suspense to Receivables Ratio
One year ago	$250,000	$25,000,000	1%
Yesterday	2,100,000	26,250,000	8%

The suspense to receivables ratio in the table indicates that there is indeed a problem, so the controller assigns additional staff to investigate and resolve the contents of the suspense account.

Actual Cash Position versus Forecast

As noted in the Cash Forecast chapter, it is extremely important to maintain a cash forecast that is as accurate as possible. If there are any variations in actual cash flows from forecasted results, the treasury staff must investigate them and use the resulting knowledge to improve the forecasting model.

An excellent way to monitor cash forecast accuracy is to routinely compare the company's actual cash position, prior to financing activities, to the forecasted amount. The main point of this metric should be to note the size of the difference from the expected result. An unusually large variance, whether positive or negative, should be grounds for a review. Thus, the calculation should be on an absolute basis, rather than showing a negative or positive variance.

For example, the treasurer of a company compares actual to forecasted results for the last six weeks, and obtains the following information:

Week	Actual Ending Cash	Forecasted Ending Cash	Variance	Absolute Variance	Percent Variance
1	$1,237,000	$952,000	-$285,000	$285,000	23%
2	1,080,000	1,274,000	194,000	194,000	18%
3	1,591,000	1,846,000	255,000	255,000	16%
4	826,000	727,000	-99,000	99,000	12%
5	739,000	658,000	-81,000	81,000	11%
6	2,803,000	3,083,000	280,000	280,000	10%

The actual versus forecast information in the table reveals that the treasury staff is rapidly improving its ability to accurately forecast cash flows.

Borrowing Base Usage

A critical metric for the treasurer to follow is borrowing base usage. This is the amount of debt that has been loaned against the collateral provided by a company. If a company does not have large cash reserves, it must rely upon a line of credit to provide it with sufficient cash to keep the company operational. Lenders almost always insist upon using a company's accounts receivable and inventory as the collateral basis for a line of credit.

For example, a business has $1,000,000 of accounts receivable and $600,000 of inventory on hand. Its lender will allow a line of credit that is based on 75% of all accounts receivable less than 90 days old, and 50% of inventory. $20,000 of the accounts receivable are more than 90 days old. This means that the applicable borrowing base for the company is:

Applicable Assets		Discount Rate		Allowable Borrowing Base
Accounts receivable of $980,000	×	75%	=	$735,000
Inventory of $600,000	×	50%	=	300,000
		Total	=	$1,035,000

The treasurer then subtracts the amount of debt currently outstanding from the borrowing base to arrive at the unused amount of the borrowing base. This unused amount is the key factor, since it must be compared to any cash shortfalls projected in the cash forecast to see if the company has sufficient available and unused debt to offset negative cash positions.

Borrowing base usage requires continual analysis, since the amount of receivables and inventory to be used as collateral is constantly changing. This is a particular concern in seasonal businesses, since they tend to build inventory levels prior to the sales season, followed by a build in accounts receivable levels during the sales season, followed by a quiet period when assets are liquidated and debts are paid off. The continual changes in debt needs and asset levels make borrowing base usage perhaps the most important metric for the treasurer of a seasonal business.

Average End of Day Available Balance

The treasurer should be aware of the average end of day available balance in each of a company's bank accounts. This information is useful for determining the amount of funds being left in non-interest-bearing accounts. It is particularly helpful for those businesses where no attempt is made to shift funds into investments, since management can then discern the approximate amount of lost interest income.

The metric can also be of use in companies where the cash balances in accounts are being routinely swept into investment accounts. Theoretically, the average end of day available balance should be zero for all accounts other than the investment account into which cash is being swept. In reality, the treasurer may have set up target balances that leave certain cash balances in outlying accounts. Further, it may have been deemed too difficult to include some accounts in a cash sweeping arrangement, perhaps due to an obstreperous local manager or currency restrictions in an account held in a different country. By tracking

the average end of day available balance for each account on a trend line, the treasurer can see if some accounts are retaining excessively large balances. At a minimum, the result is a useful reminder to periodically examine target balances and ensure that they are still valid.

Earnings on Invested Funds

The treasurer is not being paid to put a company's cash at risk in equity investments, which usually leaves only interest income as the type of income generated by invested cash, not changes in the market value of equity investments. Nonetheless, there may be cases where management is willing to put some cash at risk in an equity investment, which can generate equity gains or losses. Consequently, the following formula for earnings on invested funds includes market value changes:

$$\frac{\text{Interest income + Market value changes}}{\text{Average funds invested}}$$

Note that the calculation uses average funds invested, not the amount of cash invested as of the end of a reporting period. The amount of cash invested can change substantially by day, so the average investment figure in the denominator should be based on an average of the invested balance in every business day of a reporting period.

For example, a treasurer is authorized to invest in both short-term debt instruments and stocks. As a result, the business earns $45,000 in interest income and $15,000 from an increase in the market value of its equity holdings. During the measurement period, the company had average investments of $3,000,000. The company's earnings on invested funds is calculated as:

$$\frac{\text{\$45,000 Interest income + \$15,000 Market value changes}}{\text{\$3,000,000 Average funds invested}}$$

$$= 2.0\% \text{ Earnings on invested funds}$$

In many organizations, a much higher premium is placed on risk avoidance than on investment earnings, so it is fairly common to downplay this metric. If it is used, the board of directors should confine the treasury staff to specific types of conservative investment choices, so there is no temptation to earn outsized returns by making risky investments.

Unhedged Gains and Losses

There may be circumstances where the treasury staff chooses not to create a hedge against a foreign exchange position, and the company subsequently incurs a gain or loss on that position. It is also possible that the company does not have an adequate foreign exchange forecasting system, and so does not know that it even has unhedged positions, which will most certainly result in unhedged gains or losses.

In either case, it is extremely useful to keep track of gains or losses arising from unhedged foreign currency positions, so that the treasurer can estimate when the size of these gains or losses warrant the imposition of a more extensive hedging program. The simplest form of metric is a trend line analysis. This trend line will likely yield results that routinely bounce between gains and losses. The key issue to watch for is an increasing trend in the *size* of the gains or losses over time. When they become large enough to seriously impact the company's reported results from operations, it is time to consider a combination of a better forecasting system and a more active hedging program.

Chapter Summary

Many of the metrics noted in this chapter give the treasurer information that can be difficult to act upon. The relative size of accounts receivable, accounts payable, inventory, and fixed assets may result in advisory notices from the treasurer to other parts of the company, but there is not a great deal of direct

action that the treasury staff can engage in. Similarly, the metrics for some areas over which the treasurer has more direct control—the cash forecast and earnings on invested funds—are in areas that are only adjusted gradually over time. Only two risk management metrics are absolutely essential to the treasury function. Both current and forecasted borrowing base usage must be closely monitored to ensure that a business does not run out of cash, while the tracking of unhedged gains and losses could lead to the creation of a hedging program that may potentially avoid large losses. In short, the cash management metrics requiring the most active monitoring are those that mitigate risk.

Review Questions

1. The cash conversion cycle is:
    A. The time required to convert a check into cash
    B. The time period from expending cash for the production of goods to the receipt of cash from customers in payment of those goods
    C. The period covered by a hedge
    D. The same as days sales outstanding

2. Which of the following is not part of the cash conversion cycle calculation?
    A. Days of receivables
    B. Days of inventory
    C. Days of payables
    D. Interest coverage

3. The days sales in inventory for a company with average inventory of $2,000,000 and an annual cost of goods sold of $10,000,000 is approximately:
    A. 73 days
    B. 72 days
    C. 91 days
    D. 90 days

4. The components of the fixed asset turnover ratio do not include:
    A. Gross fixed assets
    B. Accumulated depreciation
    C. Depreciation
    D. Net annual sales

5. An analysis of cash forecast accuracy should be based on:
    A. Negative variances
    B. Positive variances
    C. The absolute variance
    D. The cumulative variance

Review Answers

1. A. Incorrect. The time required to convert a check into cash is a small portion of the total time required for the cash conversion cycle.
   B. Correct. The cash conversion cycle is the time period from expending cash for the production of goods to the receipt of cash from customers in payment of those goods.
   C. Incorrect. The period covered by a hedge is not related to the cash conversion cycle.
   D. Incorrect. Days sales outstanding is a subset of the cash conversion cycle.

2. A. Incorrect. Days of receivables is part of the cash conversion cycle calculation.
   B. Incorrect. Days of inventory is part of the cash conversion cycle calculation.
   C. Incorrect. Days of payables is part of the cash conversion cycle calculation.
   D. Correct. Interest coverage measures the ability of a business to pay its interest expense. It is not related to the cash conversion cycle.

3. A. Correct. The amount is 73 days, calculated as 20% of 365 days.
   B. Incorrect. The amount of 72 days is based on a year having a duration of 360 days.
   C. Incorrect. The amount of 91 days is based on an incorrect calculation of 25% and a 365-day year.
   D. Incorrect. The amount of 90 days is based on an incorrect calculation of 25% and a 360-day year.

4. A. Incorrect. Gross fixed assets is part of the denominator of the calculation.
   B. Incorrect. Accumulated depreciation is part of the denominator of the calculation.
   C. Correct. Depreciation is not part of the fixed asset turnover ratio.
   D. Incorrect. Net annual sales is the numerator of the calculation.

5. A. Incorrect. The total size of the variance is the key item to investigate, not just the negative variances.
   B. Incorrect. The total size of the variance is the main item to investigate, not just the positive variances.
   C. Correct. The size of the variance is most important, so the absolute variance is the best measure.
   D. Incorrect. The period-by-period absolute variance should be measured, rather than the cumulative variance.

Glossary

A

Accounts payable. The obligations of a buyer to pay its suppliers for goods or services which the buyer acquired from them on credit terms.

Accounts receivable. Amounts due from customers who have purchased goods or services from the seller on credit terms.

Accredited investor. An investor who is defined by the Securities and Exchange Commission as being financially sophisticated, and who therefore requires a reduced amount of financial disclosure.

ACH debit. An electronic transaction initiated by the payee to shift funds from the payer's account to the payee's account.

ACH payment. An electronic funds transfer that is initiated through the Automated Clearing House system.

Ask price. The price at which a dealer is willing to sell a currency.

Available balance. The balance in a cash account where there is a delay by the controlling bank in crediting funds to the account.

B

Bad debt. An account receivable that cannot be collected.

Bank balance. The ending cash balance shown on a bank statement for a bank account, or at any time when an inquiry is made regarding the bank's record of the cash balance in an account.

Bank draft. A check issued and guaranteed by a bank.

Bank reconciliation. A comparison between the cash position recorded on an entity's books and the position noted on the records of its bank, usually resulting in some changes to the book balance to account for transactions that are recorded on the bank's records but not the entity's.

Bank statement. A document issued by a bank at monthly intervals, detailing the beginning and ending cash balances in an account, as well as the detailed transactions that impacted the account during the reporting period.

Base currency. The first currency stated in a foreign exchange quote. This is the home currency used by a business seeking a foreign exchange quote.

Benchmark hedge ratio. The proportion of currency holdings that will be hedged.

Bid price. The price at which a foreign currency dealer agrees to buy a currency.

Book balance. The account balance in a company's accounting records.

Borrowing base. The total amount of collateral against which a lender will lend funds to a business.

C

Call option. An agreement giving the buyer the right to buy an investment instrument at a certain price and within a certain time period.

Capital lease. A lease in which the lessor only finances the lease, and all other rights of ownership transfer to the lessee.

Cash conversion cycle. The time period from when cash is expended for the production of goods, until cash is received from customers in payment of those goods.

Cash flow hedge. A transaction entered into with the intent of offsetting the variability of cash flows.

Cash sweeping. The practice of automatically transferring cash at the end of each business day from an account into an investment option that earns interest income.

Check. A written order by a payer to its bank, stating a sum to be paid to the payee named on the order.

Collateral. An asset that a borrower or guarantor has pledged as security for a loan.

Correspondent bank. A bank that acts as the agent for another bank.

Counterparty. The other party that engages in a financial transaction. For example, if a company sells an asset, there is a counterparty that is buying the asset.

Covenants. Conditions related to company operations and practices that are imposed by lenders.

Currency pair. A statement of the amount of a quote currency required to purchase one unit of base currency. Foreign exchange pricing is always stated in terms of currency pairs.

D

Deposit in transit. Cash and/or checks that have been received and recorded by a business, but which have not yet been recorded by the bank where the company deposits the funds. If this occurs at month-end, the deposit does not appear in the bank statement, and so is a reconciling item in the bank reconciliation.

Drop shipping. Having the supplier of goods ship them directly to a company's customers.

Dunning letter. A notification sent to a customer, stating that the customer is overdue in paying an invoice.

E

Earnings credit. The interest paid on the funds in a bank account, to be used to offset account fees.

Expiry date. The expiration date of a contract.

F

Fair value hedge. A transaction entered into with the intent of offsetting changes in the fair value of an asset or liability.

Float. The time period during which funds are in transition between the various stages in the payment process.

Functional currency. The currency that an entity uses in the majority of its business transactions.

H

Hedge effectiveness. The extent to which a transaction designated as a hedge offsets changes in a previously identified fair value or cash flow.

Hedging. Actions taken to reduce the volatility of cash flows, earnings, and/or the value of investments.

Held-to-maturity security. A security having a fixed maturity, for which the holding entity has both the ability and the intention to hold it to maturity.

I

Inventory. An asset held for sale in the ordinary course of business, or that is in the process of being produced for sale, or the materials or supplies intended for consumption in the production process.

L

Laddering. The strategy of investing in a set of securities having different maturities.

Lease. An agreement under which the lessee makes a number of incremental payments to the lessor for the use of an asset, while the lessor owns the asset associated with the lease.

Letter of credit. A guarantee by a bank that a payment will be made to a supplier on behalf of the bank's client.

Lifting fee. The transaction fee charged to the recipient of a wire transfer, which the recipient's bank imposes for handling the transaction.

Line of credit. A commitment from a lender to pay a company whenever it needs cash, up to a pre-set maximum level.

Liquidity. The ability of an entity to pay its liabilities in a timely manner.

Lockbox. A service offered by a bank, where it receives and processes check payments on behalf of a client company.

London Interbank Offered Rate (LIBOR). An interest rate at which banks borrow funds from each other in the London interbank market. LIBOR is based on the deposit rate for loans between the most financially-secure banks.

Mark to market. The revaluation of a security to reflect its current market price, rather than the cost at which it was purchased.

M

Mail float. The time required for a check payment to travel from the payer to the payee through the postal system.

Mark to market. The revaluation of a security to reflect its current market price, rather than the cost at which it was purchased.

N

Notional amount. The face amount used to calculate payments on a financial instrument, such as an option or interest rate swap.

Notional pooling. A mechanism for calculating interest on the combined balances of bank accounts that a corporate parent chooses to cluster together, without actually transferring any funds into a central investment account.

NSF check. A check that was not honored by the bank of the payer, on the grounds that the payer's bank account does not contain sufficient funds. NSF is an acronym for "not sufficient funds."

O

Operating lease. The rental of an asset from a lessor.

Outstanding check. A check payment that has been recorded by the issuing entity, but which has not yet cleared its bank account as a deduction from cash. If this occurs at month-end, the check does not appear on the bank statement, and so is a reconciling item in the bank reconciliation.

Overdraft. A bank loan to cover checks that would otherwise be rejected due to a lack of funds.

P

Par value. A legally-mandated minimum amount assigned to a share of stock.

Paydex. A score issued by Dun & Bradstreet to businesses, indicating the promptness of their payments to creditors.

Positive pay. The matching of presented checks by a bank to a company-provided list of checks issued, with the intent of detecting fraudulent checks.

Put option. An agreement giving the buyer the right to sell an investment instrument at a certain price and within a certain time period.

Q

Quote currency. The second currency stated in a foreign exchange quote. This is the currency being purchased.

R

Receipts and disbursements method. The use of specific cash expenditure and receipt information to derive a cash forecast.

Reference rate. An interest rate used as the basis for an interest rate swap, floating rate security, or forward rate agreement.

Remittance advice. A document that accompanies a payment, and which contains the details of the payment being made.

Reverse factoring. An arrangement where a lender pays the invoices of a company to its suppliers sooner than indicated by the payment terms, in exchange for an interest charge in the form of a discount from the face amount of each invoice.

S

Settlement risk. The risk that the counterparty to a transaction will not pay.

Shelf registration. The registration of stock up to three years before sale of the stock.

Software as a service. A system where software and related data are hosted by the vendor, and accessed on-line by clients.

Spot price. The price at which a currency can currently be purchased.

Stock transfer agent. An entity paid by a company to maintain its shareholder records, including account balances and share certificate issuances.

Strike price. The price at which an option or other similar contract can be exercised.

T

Target balance. A designated minimum amount of cash to keep on hand, to meet short-term cash requirements.

Trading security. A security that an entity intends to sell in the short term for a profit, which it expects will be generated by changes in the price of the security.

Transaction exposure. The risk of loss from a change in exchange rates during the course of a business transaction.

Translation exposure. The risk of a reported change in value of a company's assets and liabilities, if they are denominated in a foreign currency.

Treasury management system. A computer system that manages cash, investments, and debt tracking, while also providing some risk analysis functionality.

U

Unregistered stock. Shares in a company that cannot be traded without first being registered with the SEC or qualifying under an exemption.

W

Wire transfer. The direct transfer of funds from the payer's account at one bank to the payee's account at another bank.

Working capital. The amount of an entity's current assets minus its current liabilities.

Y

Yield curve. A line that plots the interest rates associated with an investment having different durations. A normal yield curve reveals a gradual increase in interest rates as maturity dates increase. An inverted yield curve reveals declining interest rates as maturity dates increase.

Z

Zero balance account. A bank account in which a zero balance is automatically maintained by only transferring sufficient funds into it to cover presented checks, and to transfer out funds that are not immediately needed.

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