Chapter 19

Managing Net Working Capital

This chapter discusses the management of short-term assets and liabilities within a multinational corporation. The assets consist of cash, marketable securities, inventories, and accounts receivable. The liabilities consist of short-term debt and accounts payable. We begin by discussing net working capital, an investment that a firm must manage well to ensure its future profitability. The next topic is international cash management, which is followed by a discussion about how foreign affiliates transfer funds to their parent corporations.

When related affiliates buy goods and services from each other, the prices charged are called *transfer prices*. This chapter explores how different transfer pricing policies can shift a firm's income and income tax burdens around the world and how governments attempt to regulate these shifts. The effect of transfer pricing policies on managerial incentives is also considered. Governments watch transfer prices very closely as large tax payments can be shifted across jurisdictions. For example, in September 2006, GlaxoSmithKline (GSK), the U.K. headquartered global pharmaceutical firm, agreed to settle a transfer pricing dispute with the U.S. Internal Revenue Service (IRS) by paying $3.1 billion in back taxes, interest, and fines. The IRS argued that GSK charged its American subsidiary too much for Zantac, the blockbuster ulcer treatment drug, resulting in lower profitability for the American subsidiary and lower taxes for the IRS.

We also address techniques for mitigating problems associated with blocked funds. Finally, we discuss the management of a firm's accounts receivable and its inventories in an international environment.

19.1 The Purpose of Net Working Capital

Every corporation maintains a stock of current assets and current liabilities to buffer the inflows and outflows of cash generated by the firm's business. **Working capital**, or current assets, is the collection of cash, marketable securities, accounts receivable, and inventories held by a firm at any point in time. By subtracting the value of a firm's current liabilities, which are the corporation's short-term debts and its accounts payable, from its stock of working capital, we arrive at its **net working capital**:

$$\text{Net working capital} = \text{Cash} + \text{Marketable securities} + \text{Accounts receivable} + \text{Inventories} - \text{Short-term debt} - \text{Accounts payable}$$

If a firm can be managed with a smaller stock of net working capital, cash can be paid to shareholders. Thus, one goal of management is to run a corporation efficiently in order to minimize the need for net working capital.

Increases in net working capital are investments that a firm makes to produce cash in the future. This is perhaps most easily understood when you think about inventories.

Inventories as Assets

The stock of a firm's inventory includes raw materials, goods that represent work-in-progress, and finished goods. Raw materials and work-in-progress are necessary because all goods take time to produce. Finished goods inventories are necessary because demand is stochastic, and orders are placed randomly by customers.

Firms typically find that costs of production are lower if production is smoothed over time. If a firm tries to match its production to its demand, the firm will have to pay its workers overtime wages and ask its suppliers to expedite shipments when demand is high, both of which increase costs. If a firm does not meet orders, it will incur backlog costs because frustrated customers will be less likely to do business with the firm in the future. Hence, stockpiling inventory can help minimize the cost of production and prevent the loss of future sales, both of which increase profitability. Thus, increasing a firm's inventory is as much of an investment as if the firm were purchasing a new machine to enhance its production and future profits. Of course, as with all other investments, management must decide on the appropriate level of inventories to allow the right rate of return to the capital that is invested in the inventories. We address this issue later in the chapter.

Other Current Assets

Increases in cash, marketable securities, and accounts receivable should also be viewed as investments the firm is making in the operation of its business. For example, suppose Reagon Optical Products sells contact lenses to a pharmacy on credit. This increases Reagon's accounts receivable because the value of the sale, which increases accounts receivable, is worth more than the decrease in Reagon's inventory. Hence, Reagon's net working capital increases. However, the actual revenue from the sale will only be collected in the future, which means that Reagon is making an investment. For example, Reagon could have induced its customer to pay today by lowering the price of the contact lenses. The fact that the transaction takes place on credit indicates that Reagon's long-run profitability is enhanced by selling the contact lenses at the higher price and financing the sale with an extension of credit to the buyer.

Short-Term Liabilities

Accounts payable and other short-term borrowings generate resources and conserve cash. If a firm needs additional raw materials, and it uses internally generated cash to buy them, no additional funds are needed from outside investors. Hence, there is no change in net working capital because the value of the raw materials, or additional inventory, is equal to the value of the cash paid for them.

Likewise, if a firm takes out a short-term bank loan to purchase inventory, it does not have to tap the long-term debt market or the equity market. Again, however, the firm's net working capital does not change because the increase in its inventory of raw materials matches the increase in its short-term liabilities.

Another way a company can obtain goods for its inventory without using the assets of the firm is to buy on trade credit from its suppliers. This action generates an account payable. Once again, inventories rise, but the firm's *net* working capital has not changed because the increase in working capital is offset by a corresponding increase in the firm's short-term liabilities.

Of course, as noted earlier, firms try to hold enough net working capital to smooth out the production–sales cycle. This implies that there is an optimal amount of net working capital a firm should have on hand. Having excessive cash or short-term assets is costly if the investments earn a lower rate of return than shareholders could earn. Also, excessive cash can lead to severe agency problems between the shareholders and the managers, which is also very costly. Now that we've explored the importance of managing net working capital, let's look at how to manage net working capital in an international context.

19.2 International Cash Management

The goals of an international money manager of a multinational corporation are (1) to establish control over the cash resources of the organization, (2) to invest excess short-term funds in an optimal way, and (3) to obtain short-term financing at the lowest cost. Establishing control over the cash resources of an organization necessitates creating a reporting system that provides timely and accurate information. When the information is available, the international cash manager can try to improve upon the cash disbursements to and collections from its foreign affiliates. By synchronizing the flows of funds, the international cash manager can lower the cost of moving funds among them. These goals are no different than those of a purely domestic cash manager who transfers money from one account to another (or from one subsidiary to another) so that the firm has an optimal amount of working capital. However, there are constraints on international cash management that domestic managers do not face.

Constraints on International Cash Management

An international cash manager of a multinational corporation often encounters constraints that do not arise in a purely domestic corporation. These constraints include government restrictions on the transfers of funds, taxes that depend on the type of fund transfer, transaction costs in the foreign exchange market, and problems maintaining the liquidity of all foreign affiliates.

We first discussed blocked funds in Chapter 18. **Blocked funds** arise when the government of a foreign country makes the nation's currency completely inconvertible. Foreign exchange controls that impose unattractive foreign exchange rates can also constrain a firm. Host countries also impose taxes on the repatriation of funds from a foreign affiliate to its parent. These taxes often differ, depending on whether the transfer of funds consists of dividends, service fees, or royalty payments. Such taxes can have a constraining effect on a firm's international cash management as well.

Of course, transaction costs are incurred whenever funds are converted from one currency into another. These transaction costs include the fees charged by banks as well as the bid–ask spread that banks use to generate profits, the loss of interest that occurs during the time that funds are withdrawn from one bank and are deposited in another bank, and other transaction fees, such as cable charges. Chapter 2 notes that these transaction costs are quite small for transactions involving the major currencies of the world. Even if transaction costs are a small percentage, too frequent movement back and forth between currencies unnecessarily increases transaction costs. Also, for minor currencies, the transaction costs are larger. The final constraint on an international cash manager is the need to ensure that each of the firm's foreign affiliates maintains an adequate amount of cash to make it liquid enough to function efficiently.

Cash Management with a Centralized Pool

Economists have long noted that short-term cash and liquid assets satisfy the needs of firms that arise from both the transactions and precautionary demands for money. The **transactions**

demand for money arises because a firm realizes that it has some expenditure that will be incurred in the near future. The **precautionary demand for money** arises because a firm may need to purchase something due to an unanticipated change in its environment.

Just as an inventory of finished goods buffers the production process and lowers costs, an inventory of cash provides a buffer that lowers the costs of doing business due to the mismatch between inflows and outflows of funds. Of course, holding cash balances and short-term, highly marketable securities has costs. The rates of return on these assets are lower than the rates of return on longer-term assets precisely because these assets are liquid. Holding cash provides flexibility, but the cost of this flexibility is the forgone interest that could have been earned by holding longer-term, less liquid assets.

By centralizing the management of short-term cash balances of its foreign affiliates, a multinational corporation (MNC) can reduce the transaction costs incurred in moving cash around the world, and it can minimize the overall amount of cash needed by the organization. The savings in transaction costs arise from utilizing a multilateral netting system. The savings in the overall level of cash balances arise from exploiting the stochastic nature of the precautionary demand for money by centralizing the holdings of cash. We now consider these issues in detail.

Short-Term Cash Planning

To illustrate the management of a firm's centralized cash pool, consider an MNC that has European affiliates operating in Great Britain, Denmark, the Netherlands, and Spain. Exhibit 19.1 presents the daily cash reports of each European affiliate, as they might be transmitted to the company's central cash pool located, say, in Geneva, Switzerland. At the

Exhibit 19.1 Daily Cash Reports of an MNC's European Affiliates (in thousands of euros)

Date: October 21, 2011
British Affiliate
Current Cash Position: +200

Five-Day Forecasts

Day	Receive	Pay	Net
+1	200	100	100
+2	150	500	−350
+3	100	150	−50
+4	200	100	100
+5	150	100	50
Net for period			−150

Date: October 21, 2011
Danish Affiliate
Current Cash Position: −100

Five-Day Forecasts

Day	Receive	Pay	Net
+1	300	200	100
+2	400	400	0
+3	600	250	350
+4	100	300	−200
+5	200	300	−100
Net for period			150

Date: October 21, 2011
Dutch Affiliate
Current Cash Position: +250

Five-Day Forecasts

Day	Receive	Pay	Net
+1	450	700	−250
+2	400	100	300
+3	200	700	−500
+4	450	200	250
+5	400	300	100
Net for period			−100

Date: October 21, 2011
Spanish Affiliate
Current Cash Position: +150

Five-Day Forecasts

Day	Receive	Pay	Net
+1	600	100	500
+2	500	100	400
+3	400	100	300
+4	200	700	−500
+5	100	200	−100
Net for period			600

Note: The cash flows for each of the affiliates are converted into euros at current exchange rates.

Exhibit 19.2 Consolidated Daily Cash Reports of an MNC's European Affiliates (in thousands of euros)

	Daily Cash Balances, October 21, 2011		
	Closing Balance	**Minimum-Desired Balance**	**Surplus (Deficit) Cash Balance**
British	200	100	100
Danish	−100	200	−300
Dutch	250	300	−50
Spanish	150	250	−100
European Total			−350

Notes: The "closing balance" is taken from Exhibit 19.1. The "minimum-desired balance" is typically set by the parent company in consultation with the management of the local affiliate. The "surplus (deficit) cash balance" represents the difference between the "closing balance" and the "minimum-desired balance."

close of business each day, the local treasurer of each affiliate would e-mail the information to the central office in Geneva. The reports are denominated in a single currency—in this case, the euro. The reports indicate that the British affiliate has €200,000 on hand, which it could spend immediately without drawing on its short-term line of credit. The Danish affiliate has borrowed €100,000, either from the central pool or from a bank. The Dutch and Spanish affiliates have cash balances of €250,000 and €150,000, respectively.

Exhibit 19.2 relates each European affiliate's existing cash balances to its previously agreed-upon, desired cash position, which is the minimum amount of cash the affiliate needs on a daily basis. Exhibit 19.2 also calculates the MNC's overall cash surplus or deficit. From Exhibit 19.2, we learn that the British affiliate's current cash balance of €200,000 is €100,000 over its minimum desired cash balance. The Danish affiliate's desired cash balance is €200,000, and it is €300,000 below this level because it previously borrowed €100,000. The Dutch affiliate is €50,000 below its desired cash balance of €300,000. Finally, the Spanish affiliate's cash balance of €150,000 places it €100,000 below its desired level. Overall, across the four European affiliates, there is a deficit of €350,000.

Managing Surpluses and Deficits

Once the information in Exhibits 19.1 and 19.2 is collected, the central office must decide how to invest any surpluses and how to cover any deficits. Excess cash can be invested in a variety of short-term money market instruments, and short-term borrowing can be done through banks or in the commercial paper market. In either case, the firm faces several choices. Most important are the currency of denomination and the maturity of the investment or the debt. The appropriate choices depend on the interest rates in different currencies, the expectations of the financial manager about the rates of appreciation and depreciation of one currency relative to another, the amount of foreign exchange risk that the organization is willing to bear, and the manager's forecasts of future short-term cash needs of the different affiliates.

For example, suppose the central office thought that a weakening of the Danish krone relative to the euro was imminent. If nominal interest differentials (the Danish krone rate minus the euro rate) did not adequately reflect their expected rate of depreciation of the krone, the central office could instruct the Danish affiliate to borrow additional kroner by drawing on its line of credit. An alternative way of discussing this situation recognizes that the minimum desired balance expressed in Exhibit 19.2 should be adjusted downward in light of the interest rates and the expectations of depreciation. Having the Danish affiliate borrow kroner provides funds to be invested. These extra kroner would be invested in the euro and other currencies that were expected to strengthen relative to the krone.

Forecasts of Cash Flows

Exhibit 19.1 provides information on the forecasted cash receipts and cash disbursements each affiliate expects to have over the following 5 days. The managers of each affiliate generate daily 5-day rolling forecasts of their cash flow needs and share this information with the central office. These 5-day forecasts help the central office improve profitability in at least three ways.

First, the forecasts can be checked for accuracy. The more accurate the forecasts, the better the firm can manage its resources. Hence, helping the affiliates to improve their forecasts should improve the operating cash needs of each affiliate by reducing its precautionary cash balances.

Second, the 5-day forecasts allow the central office to assess the short-term needs of each affiliate in light of the transaction costs related to exchanging different currencies and the interest rates and possible changes in exchange rates that may occur. For example, Exhibit 19.1 shows that the British affiliate is currently sitting on a lot of cash and is forecasting an inflow on day 1, but it has a large payment due on day 3. On net, over the 5 days, it expects to have to borrow. Given the costs of converting between pounds and euros and the losses possible due to adverse currency movements, it probably does not make sense to have the British affiliate transfer funds out of the country.

The third use of the 5-day forecasts is to generate overall forecasts of the net cash flows of the European affiliates. This provides the central office with information that can be used to assess the maturity and currency of denomination of investments and short-term borrowing. For example, Exhibit 19.3 aggregates the information from Exhibit 19.1 and demonstrates that the four European affiliates are forecasting positive cash flows for the next 3 days, but the cash flow forecasts are negative on days 4 and 5. Hence, this is not an appropriate time to place surplus funds in an investment with a 1-week maturity. Instead, the short-term surpluses should be invested in overnight interest-bearing accounts in anticipation of the need for funds later in the week.

Multilateral Netting Systems

Coordinating the worldwide production and distribution of the many products produced in tandem by the firm's affiliates makes for a large volume of transactions and a heavy flow of funds between them. Of course, the greater the flow of funds, the larger the transaction costs. Although the transaction costs differ with the particular country, it is estimated that they vary between 0.25% and 1.5% of the amount of funds transferred. Thus, there is an incentive for the MNC to avoid fund transfers between affiliates.

The firm can save money on these transactions by using a **multilateral netting system**, just like the multilateral netting described in Chapter 2. Multilateral netting extends the concept of bilateral netting to several affiliated parties with commensurate cost savings.

Exhibit 19.3 Consolidated 5-Day Cash Forecasts of an MNC's European Affiliates (in thousands of euros)

	British	Danish	Dutch	Spanish	Total
Day 1	100	100	−250	500	450
Day 2	−350	0	300	400	350
Day 3	−50	350	−500	300	100
Day 4	100	−200	250	−500	−350
Day 5	50	−100	100	−100	−50
5-day Total	−150	150	−100	600	500

Notes: The forecasts are taken from Exhibit 19.1. The 5-day total is the sum of the individual forecasts.

Exhibit 19.4 The Cash Flows of an MNC's Affiliates Before Multilateral Netting (in thousands of euros)

Receiving Affiliate	Paying Affiliate				Total Receipts	Net Receipts (Payments)
	British	Dutch	Spanish	Danish		
British	—	3,000	7,000	4,000	14,000	5,000
Dutch	1,000	—	3,000	3,000	7,000	(3,000)
Spanish	5,000	6,000	—	2,000	13,000	(1,000)
Danish	3,000	1,000	4,000	—	8,000	(1,000)
Total Payments	9,000	10,000	14,000	9,000	42,000	—

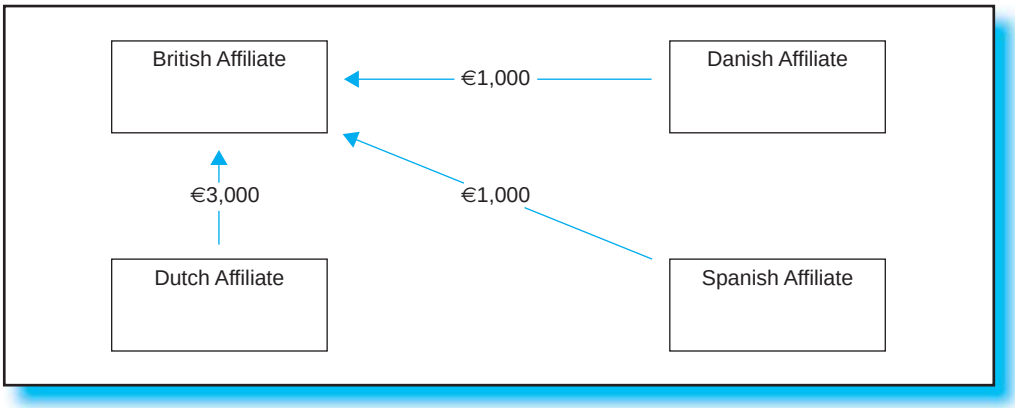
Exhibit 19.4 presents a typical month's cumulative cash flows before any multilateral netting for the European affiliates of a multinational corporation. Without multilateral netting, each of the affiliates would make three payments, and each would accept three receipts. For example, the Spanish affiliate owes €4,000,000 to the Danish affiliate, €7,000,000 to the British affiliate, and €3,000,000 to the Dutch affiliate. In turn, the Spanish affiliate has booked receivables of €2,000,000 from the Danish affiliate and is owed €5,000,000 from the British affiliate and €6,000,000 from the Dutch affiliate. If the Spanish affiliate made all these payments and accepted all the receipts, there would be €14,000,000 of payments and €13,000,000 of receipts. Under bilateral netting, the Spanish affiliate sends €2,000,000 (€7,000,000 − €5,000,000) to the British affiliate, and the outstanding debts are cancelled. Because the gross debt of €12,000,000 is not transferred, the cost saving is the transaction costs on €10,000,000.

Multilateral netting can do even better. By examining the intracompany payment matrix in Exhibit 19.4, we see that the British affiliate has a net receipt of €5,000,000, whereas the other three European affiliates have net payments. The Dutch affiliate owes a net amount of €3,000,000, and the Danish and Spanish affiliates owe a net amount of €1,000,000. Transactions costs are minimized by having each of the European affiliates make just one net payment to the British affiliate. This is summarized in Exhibit 19.5.

Notice in Exhibit 19.4 that there would be €42,000,000 of total transactions between the four affiliates if all affiliates made all their gross payments. If transaction costs in the foreign exchange market average 0.4%, total transaction costs in this example, without multilateral netting, would be

$$0.004 \times €42{,}000{,}000 = €168{,}400$$

Exhibit 19.5 Cash Flows After Multilateral Netting (in thousands of euros)



However, with the multilateral netting shown in Exhibit 19.5, the total payment between the affiliates is reduced to €5,000,000, which generates transaction costs of only

$$0.004 \times €5{,}000{,}000 = €20{,}000$$

This is a significant savings for the company. In addition, many MNCs facilitate the process of multilateral netting by establishing a foreign subsidiary to serve as a netting center in a country with minimal foreign exchange controls. It is also possible to outsource the netting (and other cash management services) to a bank or other third party. Not surprisingly, Internet-based netting services have also appeared recently.

Using a Centralized Cash Management System to Reduce Precautionary Cash Demands

Centralized cash management also allows the MNC to exploit differences in the precautionary demands for money in their affiliates that arise from the uncertain timing of future cash inflows and outflows. Uncertainty in the demand for future cash is described with a probability distribution. Suppose the affiliates' cash demands are normally distributed. Then, we know that if an affiliate holds cash balances that exceed the mean of the probability distribution by 2 standard deviations, there is slightly less than a 2.5% probability that the affiliate's demand for cash will exceed its available cash.

Let's again consider the British, Danish, Dutch, and Spanish affiliates of the MNC in the multilateral netting example. If each affiliate describes its precautionary demand for cash with a probability distribution, the overall organization can reduce the total demand for cash while still satisfying the demands of each affiliate by exploiting the fact that the demands for cash from the different affiliates will not be perfectly correlated in the future.

To be concrete, suppose that if each affiliate were to operate independently, each would desire to hold cash balances equal to its mean demand for cash plus two standard deviations of the distribution. Exhibit 19.6 presents a hypothetical summary of these positions. The total demand for cash of each affiliate equals its mean demand, or what it expects to pay in the near term, plus cash balances equal to two standard deviations of its possible future expenditures. For example, the Spanish affiliate forecasts that it expects to spend €2,500,000, but it needs an additional $2 \times €1{,}150{,}000 = €2{,}300{,}000$ to be 97.5% sure that it will not be caught short of cash in the future. Consequently, the Spanish affiliate's total demand for cash is €4,800,000. The sum of the total demands for cash of the four European affiliates is €14,300,000.

Now, let's centralize the cash balances at a regional cash management office. What level of cash balances must the central office hold to be sure both that it can meet the expected demands of its affiliates and that it will meet contingent demands for cash 97.5% of the time? To answer this question, recognize that the central office is concerned with

Exhibit 19.6 European Affiliates' Demands for Cash

	Mean Demand for Cash	One Standard Deviation	Total Demand for Cash
British	€1,000,000	€750,000	€2,500,000
Danish	€2,000,000	€900,000	€3,800,000
Dutch	€1,500,000	€850,000	€3,200,000
Spanish	€2,500,000	€1,150,000	€4,800,000
Total	€7,000,000		€14,300,000

Notes: The first two columns list the affiliates' mean demands for cash and their standard deviations. For example, the British affiliate expects to use €1,000,000 in the coming month, but it may need as much as €1,000,000 + 2 × €750,000 = €2,500,000 to cover unexpected contingencies with 97.5% probability. The third column reports the sum of the mean and two standard deviations.

the sum of the demands for cash from the four affiliates. Because each demand for cash is normally distributed, the demand for cash of the central office will also be normally distributed. The mean demand for cash will therefore be the sum of the mean demands of the four affiliates:

$$€1{,}000{,}000 + €2{,}000{,}000 + €1{,}500{,}000 + €2{,}500{,}000 = €7{,}000{,}000$$

The savings in cash balances arise if the precautionary demands for money are less than perfectly correlated with each other. If the precautionary demands for cash are completely uncorrelated, we know that the variance of the sum of four random variables is the sum of their variances. Hence, the standard deviation of the demand for money of the central office is the square root of the sum of the four variances:

$$[(€750{,}000)^2 + (€900{,}000)^2 + (€850{,}000)^2 + (€1{,}150{,}000)^2]^{0.5} = €1{,}848{,}648$$

If the central office wants to be 97.5% sure of meeting the aggregate demand for cash of the four affiliates, it must hold

$$€7{,}000{,}000 + (2 \times €1{,}848{,}648) = €10{,}697{,}296$$

Consequently, the central office can hold

$$€14{,}300{,}000 - €10{,}697{,}296 = €3{,}602{,}704$$

less cash than the sum necessary if each of the affiliates forms its demand for cash independently. If the individual affiliates' precautionary demands for cash are positively correlated, the cash saving will be commensurately less than €3.6 million; but, if the individual affiliates' precautionary demands for cash are negatively correlated, the cash savings will be more than €3.6 million.

Limits to Centralization

The 2007 to 2010 global financial crisis caused corporations to rethink their desire for centralized cash management. If even the largest banks have the potential to default, MNCs must diversify this default risk. During the crisis, Faurecia, the European automotive parts manufacturer, which operates in 32 countries, found that having access to local banks in countries like India facilitated its access to loans that it would otherwise not have been able to obtain from its developed country banks. In a Cash Management Debate in *Euromoney* (2010), Faurecia's Treasurer argued, ". . . corporates may want to concentrate on picking specific banks for certain specialist products, and not trying to get their main corporate bank to provide everything, to spread the counterparty risk" (p. 130).

19.3 Cash Transfers from Affiliates to Parents

Foreign affiliates of a multinational corporation transfer cash to the parent headquarters primarily as dividends, royalties, management fees, and payments related to the sale of goods and their transfer prices. Government officials in host countries prefer to see the free cash flows of foreign affiliates reinvested in the host country rather than paid as dividends to the shareholders of the MNC. On the other hand, host country governments also recognize that a direct investment by a multinational corporation brings with it valuable technology, capital, managerial skills, and jobs. Payments made by foreign affiliates to their parents in the form of royalties for patents and fees for services are usually recognized as legitimate business expenses of the foreign affiliate and hence reduce corporate income taxes. Because host governments apply different tax rates to different types of income being repatriated, MNCs try to minimize these taxes by doing advance planning before establishing an affiliate.

International Dividend Cash Flows

Dividend payments make up the bulk of international cash flows transferred from foreign affiliates to their parent corporations. For U.S. parent corporations, dividends typically represent more than 50% of all remittances. The primary determinants of a firm's dividend policy for a foreign affiliate include the profitability of the affiliate, its investment opportunities, taxes in the host country and the home country, and foreign exchange and political risks.

If a foreign affiliate is profitable, it will be generating cash that could be paid to the parent as a dividend, whereas if it is unprofitable, it will be unable to pay dividends without accessing capital markets to fund these payments. If the investment opportunities of the foreign affiliate are good, the foreign affiliate's earnings should be reinvested because the overall firm wants to undertake as many positive net present value projects as possible. If the foreign affiliate is generating a substantial amount of free cash flow, the parent may want to institute a dividend policy for the subsidiary. A dividend policy requires the corporation to declare a quarterly or annual dividend equal to a certain percentage of its foreign earnings.

Tax Planning

Host country governments tax the income of foreign affiliates directly and withhold additional taxes on the repatriation of dividends. **Tax planning** is the process of minimizing the firm's taxes by choosing when to repatriate funds. The firm should shift its dividends into the future if the firm thinks that the withholding tax on the dividends is going to be reduced. Of course, the firm must be able to reinvest the funds to generate a reasonable expected rate of return if it is going to shift the profits into the future. In addition, the parent corporation often receives a tax credit for the foreign taxes it has paid on its dividends. The tax credit is worth more to the firm if the firm is profitable and paying taxes to the home country. Otherwise, the foreign tax credit would be worthless.

Dealing with Political Risk

The political environments of foreign affiliates can change significantly from year to year. Consequently, it is advantageous for a multinational corporation to have an established dividend policy that it can easily defend if government officials of the host country question it. Without such a policy or a history of dividend payments, an MNC may have difficulty explaining the reason for any given year's dividend payment.

For example, if the host country is having difficulty financing its balance of payments, it may appear to the government that the MNC's dividend payment is actually an attempt by the company to export capital from the country in a time of crisis. Even if a government blocks the dividends and no transfers can be made, MNCs find it to their advantage to declare a dividend in order to establish its validity in case the government later relaxes its foreign exchange restrictions.

Some corporations also set a "common" dividend repatriation rate for all their foreign affiliates in different countries. This approach establishes that the shareholders of the parent corporation demand a certain share of the earnings of all of the corporation's foreign subsidiaries and are not merely trying to take capital out of one particular country.

Dealing with Foreign Exchange Risk

If a parent corporation thinks that a depreciation of a foreign currency is imminent, it can try to accelerate the payment of dividends from its foreign affiliate. Conversely, if it is likely that the foreign currency will strengthen, the foreign affiliate can try to delay the dividends. This is part of the normal cycle of speculative activity in which a multinational corporation can engage. The idea of leading and lagging payments is discussed later in the chapter.

Other Factors Affecting Dividend Policy

Of course, if a foreign affiliate is a joint venture with a foreign partner, the dividend policy must be decided in consultation with the corporation's foreign partner. The costs related to negotiating a dividend payout year in and year out will tend to lead to stability in the dividend policy. Firms tend to change their dividend policies only when all parties involved perceive that there has been a permanent change in earnings.

International Royalty and Management-Fee Cash Flows

Royalties are payments made to the owners of a technology, a patent, or a trademark for the use of the technology or the right to manufacture under the patent or trademark. Royalty payments are pure profits in the sense that the firm receiving them performs no current services and incurs no current costs to receive the payment. Thus, royalties can be a substantial source of income for the receiving firm.

For example, Yum! Brands owns the KFC, Taco Bell, and Pizza Hut brands and is the world's largest restaurant chain. Yum! licenses the restaurant names to franchisees and has over 38,000 restaurants in 110 countries. It has three divisions: United States, China, and International. Its 2009 Annual Report states that Yum! Restaurants International, which operates outside the United States and China, provided over $650 million in franchise fees that required minimal capital investment on the part of the parent corporation.

Parent corporations also assess fees for services provided to their affiliates, including management and technical consulting services, and for the overhead costs associated with day-to-day operations the parent performs for the foreign affiliate. These costs include the foreign affiliate's shares of the research and development costs, legal and accounting costs, the salaries of the corporate management, and the costs of general advertising and public relations. Often, the fees associated with the parent's overhead are based on the affiliate's sales. In other circumstances, the overhead charges are based on a pro rata sharing of all the MNC's fixed costs.

Repatriation in a Joint Venture

Designing a repatriation schedule in a joint venture is especially important because it establishes the rules by which future payments can be made and curtails the problems associated with negotiating between foreign partners whose future interests might not be aligned. Because the MNC often supplies technological and design expertise as well as capital to its affiliate in the host country, it is compensated with a royalty or fee for the technology, which is the affiliate's cost. In light of this fact, the division of profits in the joint enterprise may give a somewhat smaller share of net income to the foreign company than would be dictated by the percentage of capital that it invested to create the joint venture.

Tax Advantages of Royalties and Fees

Royalties and fees often have income tax advantages over dividends because most countries withhold taxes on dividends but not necessarily on royalties and fees. Consequently, when an affiliate pays a dividend to its parent, it does so after paying local income taxes and the withholding tax on the dividend. Under U.S. tax law, the parent obtains tax credits both for the local income tax paid and for the withholding tax paid. However, if the foreign affiliate's combined tax rate is greater than the parent's tax rate, some of the tax credit may be lost.

In contrast, royalties and fees are paid out of pretax income, and if there is a withholding tax, the tax rate is often lower than the rate levied on dividends. Of course, the royalties and fees received by the parent are income, so the parent must pay income taxes on them to the home country.

Transfer Pricing and Cash Flows

Firms charge their affiliates **transfer prices** when selling goods and services to them. Consequently, these prices are not directly determined by market forces, and it is often difficult to determine whether a particular transfer price is close to what would be set in a competitive market. This is especially true of semi-finished manufactured goods for which there is literally no alternative market. Because a higher transfer price shifts income and tax payments from the affiliate that is paying the price to the affiliate that is receiving the price, transfer pricing is a politically contentious issue. Governments often argue that MNCs use transfer pricing to avoid paying income taxes, withholding taxes, and tariffs. Governments consequently establish rules and regulations that specify whether a transfer price is appropriate.

Shifting Income and Tax Burdens Between Countries

Let's examine how a multinational corporation could use transfer prices to lessen its income tax. Consider Exhibit 19.7, which shows how a low transfer price (shown in Panel A) affects a company's taxes on net income versus a high transfer price (shown in Panel B). The manufacturing affiliate is located in the home country, where the corporate income tax rate is 30%, and the distribution affiliate is located in a foreign country, where the corporate income tax rate is 60%.

The analysis is conducted on a per good sold basis. From the perspective of the company as a whole, it costs $1,800 to produce and sell the good. The original cost of goods sold that is incurred by the manufacturing affiliate is $1,500, and operating expenses are $200 for the manufacturing affiliate and $100 for the distribution affiliate. The good can ultimately be sold for $3,200. Let's assume that these numbers cannot be changed by different transfer policies. Hence, there is $3,200 − $1,800 = $1,400 of taxable income for the consolidated company. The transfer price determines what share of this income accrues to the manufacturing affiliate, what share accrues to the distribution affiliate, and how much total tax is paid.

Exhibit 19.7 Effects of High and Low Transfer Prices on Net Income

Panel A: Low-Transfer-Price Policy

	Manufacturing Affiliate (30% tax rate)	Distribution Affiliate (60% tax rate)	Consolidated Company
Sales	$2,200	$3,200*	$3,200*
Less Cost of Goods Sold	1,500*	2,200	1,500*
Less Operating Expenses	200*	100*	300*
Taxable Income	$ 500	$ 900	$1,400*
Less Income Taxes	150	540	690
Net Income	$ 350	$ 360	$ 710

Panel B: High-Transfer-Price Policy

	Manufacturing Affiliate (30% tax rate)	Distribution Affiliate (60% tax rate)	Consolidated Company
Sales	$2,600	$3,200*	$3,200*
Less Cost of Goods Sold	1,500*	2,600	1,500*
Less Operating Expenses	200*	100*	300*
Taxable Income	$ 900	$ 500	$1,400*
Less Income Taxes	270	300	570
Net Income	$ 630	$ 200	$ 830

Note: The numbers marked with an asterisk are the true revenues and costs and do not change with different transfer prices. All other numbers change with different transfer prices.

The Effect of a Low Transfer Price

In Exhibit 19.7, Panel A, the manufacturing affiliate charges a low transfer price of $2,200. Its expenses are $1,500 plus $200, so its taxable income is $500. The manufacturing affiliate pays the 30% income tax of $150 and has after-tax net income of $350. The distribution affiliate pays $2,200 for the goods and has expenses of $100. After selling the goods for $3,200, the distribution affiliate has before-tax income of $900. With a 60% tax rate, it pays $540 of income tax. Thus, the consolidated company has taxable income of $1,400, on which it pays income tax of $690, which works out to be a tax rate of 49.3%. That leaves net income of $710 for the consolidated company.[1]

The Effect of a High Transfer Price

Now, suppose the manufacturing affiliate charges a high transfer price of $2,600, as in Panel B of Exhibit 19.7. The manufacturing affiliate now has taxable income of $900; it pays income tax of $270; and its net income is $630. The distribution affiliate pays $2,600 for the goods, which reduces its taxable income to $500. Its income tax is now $300, which reduces its net income to $200. The consolidated company now pays income tax of $570 on the same taxable income of $1,400, which implies a 40.7% tax rate. The net income of the consolidated company therefore increases to $830. By shifting $400 of income from the regime with the 60% tax rate to the regime with the 30% tax rate, the company saves $30\% \times \$400 = \$120$. This represents an increase in net income from $710 to $830.

Notice that the increase in the transfer price also shifted income from the distribution affiliate to the manufacturing affiliate. This obviously would still be the case if the tax rates in the two countries were the same. However, the net income of the consolidated company would not change when moving from a low transfer price to a high transfer price. This shift in income can affect managerial incentives as we explain below. To see the shift in income, let the tax rate be 30% in both countries. The income tax of the distribution affiliate would fall to $270 under the low-transfer-price policy, which would cause its net income to increase to $630. The net income of the consolidated company would be $980, which is 70% of $1,400. Increasing the transfer price to $2,600 would again cause the taxable income of the distribution affiliate to fall to $500, but with a 30% tax rate, its net income would increase to $350. The net income of the manufacturing affiliate would be $630, and the net income of the consolidated company would be $980. The increase in the transfer price effectively shifts funds from the distribution affiliate to the manufacturing affiliate.

Transfer Pricing Regulations

Governmental tax authorities are aware of the incentives that multinational corporations face to manipulate transfer prices to avoid taxes. Economists have even been able to demonstrate that the effects are in the data.[2]

Tax regulations and court cases in each country have established a body of law for determining whether a transfer price is appropriate. In the United States, the IRS specifies that an appropriate transfer price is one that reflects an "arm's-length price"—that is, one that would

[1] A more complete analysis of this issue would examine the ultimate effect of different transfer pricing policies on the ultimate cash flows of the parent corporation. Such an analysis would involve consideration of the dividends that are actually paid to the parent and the foreign tax credits that the parent can use to offset tax owed to the home country tax authority, as in Chapter 15.

[2] See Bartelsman and Beetsma (2003) for empirical evidence that much of a unilateral increase in corporate taxes in OECD countries is lost because of decreases in reported income. The empirical work in Clausing (2003) also indicates that after controlling for other variables that affect trade prices, a lower country corporate tax rate is associated with lower U.S. intrafirm trade export prices to that country and higher import prices from that country, which is consistent with shifting income to the low-tax country. Similar results for Hong Kong are reported by Feenstra and Hanson (2004).

be observed in a sale of the good or service to an unrelated customer.[3] The IRS recognizes five methods that can be used to establish an arm's-length price. The methods are presented here, in decreasing order of general acceptance to tax authorities:

1. The comparable uncontrolled price method
2. The resale price method
3. The cost-plus method
4. The comparable-profits method
5. Other acceptable methods

The Organization for Economic Cooperation and Development (OECD) also recommends these methods for its member countries.

The most accurate evidence of an arm's-length price is to demonstrate that the transfer price is equivalent to a comparable uncontrolled price. Uncontrolled prices are straightforward to determine if the good or service that is being transferred between related affiliates is also being sold by the MNC to an unrelated corporation or if two unrelated corporations trade a similar good or service. However, in practice, it is often difficult to document two transactions that are identical in all features. This problem is particularly difficult when goods are made to order.

The resale price approach to establishing an arm's-length price starts with the retail price to the corporation's customers, subtracts an appropriate profit for the distribution unit, and uses the net price as the allowable selling price for the manufacturing unit. However, if the distributor is adding a great deal of value to the ultimate sale of the product, either by physically altering the product or by providing extensive distribution services, it is difficult to determine the appropriate profit markup the distributor should be paid. Hence, this method is often used when the distributor does not add a substantial amount of value to the product.

The cost-plus method begins with the costs of the manufacturing unit. An appropriate markup for the profit of that unit is added to the manufacturing costs to arrive at the transfer price that should be paid by the distribution unit. Of course, determining a manufacturer's costs is no minor matter. For example, correctly allocating the manufacturer's fixed costs across the various products it produces is paramount if this method is to be used. Whenever possible, the gross markup is based on a comparable uncontrolled sale.

The comparable-profits method involves comparing the profitability of businesses engaging in similar activities to the profitability of the organization doing the transfer pricing. This method can be used in combination with one of the other methods. It works well unless the organization setting the transfer price is trading valuable intangible products, such as computer software. In this case, the corporation likely bore a significant amount of risk to develop the product and therefore deserves to earn a premium on it.

Other methods can be used when none of the other four is appropriate. The conditions for the application of such an alternative method basically require that the firm supply supporting documents that make the case why none of the other methods applies and why the approach chosen is reasonable. An alternative method is often adopted in conjunction with one of the other four if products that are not routinely traded and difficult to value are being transferred.

Although both the government of the importing country and the government of the exporting country can readily observe transfer prices, it is far more difficult to observe the actual costs of the exporting affiliate. Hence, if the political forces that are currently executing the

[3]Section 482 of the U.S. Internal Revenue Code contains provisions that regulate transfer pricing in the United States. Under this law, the IRS can reallocate gross income, deductions, credits, and allowances between related corporations to prevent tax evasion or to more accurately reflect the income of the different parties. As with other aspects of the tax code, if the IRS restates income, the burden of proof is on the taxpayer to demonstrate that the actions of the IRS are arbitrary or unreasonable.

laws of a country want to allow additional funds to flow to foreign investors, they can allow relatively high transfer pricing policies and still remain within the letter of the law that governs their country. Such a policy partially undoes the detrimental effects that high withholding taxes on dividends have on the incentives for foreigners to invest in the country. Allowing high transfer prices may therefore have the beneficial effect of encouraging additional inflows of capital for direct investment within the country.

How Transfer Prices Affect Managers' Incentives

The managers of a firm with multiple profit centers must evaluate the respective profitability of the different divisions. Transfer prices that do not reflect the true costs of the transactions between the centers can, of course, make it appear that some centers are more profitable than others, even when they aren't. Although the same problem arises in purely domestic firms, international taxes and the need to provide affiliates with enough working capital exacerbate the problem when it comes to MNCs.

If the central managers of an MNC use transfer prices to shift funds between affiliates for either tax or working capital reasons, they should modify the performance evaluation of each affiliate to reflect these facts. For example, if the managers of a distribution affiliate are required to buy manufactured products at a high transfer price, the profit margin for the affiliate will be low. In contrast, the profit margin of the manufacturing affiliate that sold the products to the distribution affiliate will be high. Unless this is understood and acknowledged, the managers of the distribution (manufacturing) affiliate might focus excessively (too little) on cost-reducing activities.

Using Transfer Prices to Offset Tariffs

Just as a transfer pricing policy can be used to lower the incidence of income taxes in a country, it can also be used to offset the effects of tariffs. Tariffs, also called import duties, are taxes that are levied on the value of imported goods. Most tariffs consist of **ad valorem duties**, which increase the price of imported products by a certain percentage, depending on the size of the tariff. To lower the incidence of these taxes, an MNC might attempt to set a low transfer price. Of course, this increases the gross income of the purchasing foreign affiliate, which exposes it to additional income taxes.

The effects of alternative transfer price policies in the presence of a tariff are demonstrated in Exhibit 19.8, which uses the same basic numbers as those in Exhibit 19.7, but now the distribution affiliate must pay a 10% ad valorem tariff to its host government. Thus, an increase in the transfer price from \$2,200 to \$2,600 increases the tariff paid from \$220 to \$260. Because the tariff is deductible, though, the taxable income of the distribution affiliate falls from \$680 to \$240 rather than from \$900 to \$500, and its net income falls from \$272 to \$96. Notice that while a low transfer price lowers the tariff paid, the consolidated company is still better off with a high-transfer-price policy because the income tax saving is greater than the increase in the tariff that has to be paid: Total income increases by \$104, from \$622 to \$726. The basic increase of \$120 in income in Exhibit 19.7 is now decreased by the \$40 of additional tariff, \$260 versus \$220, but the tariff makes the distribution affiliate less profitable, which increases the overall income of the company by $\$24 = 0.60 \times \$40$ through tax savings. Thus, $\$104 = \$120 - \$40 + \$24$.

A General Transfer Pricing Policy with Tariffs

Now, let's determine a general policy on transfer pricing in the presence of tariffs. Let t be the tariff rate in the distribution country, and let t_m and t_d be the income tax rates on the manufacturing and distribution affiliates, respectively. First, notice that each dollar increase in the transfer price increases the manufacturing affiliate's net-of-tax profit by $1 - t_m$ dollars per unit sold. Second, each dollar of transfer price increase to the distribution affiliate is increased by $1 + t$ because of the tariff. The overall increase in the cost to the distribution affiliate

Exhibit 19.8 High and Low Transfer Prices in the Presence of Tariffs

Panel A: Low-Transfer-Price Policy

	Manufacturing Affiliate (30% tax rate)	Distribution Affiliate (60% tax rate)	Consolidated Company
Sales	$2,200	$3,200*	$3,200*
Less Import Tariff (10%)		220	220
Less Cost of Goods Sold	1,500*	2,200	1,500*
Less Operating Expenses	200*	100*	300*
Taxable Income	$ 500	$ 680	$1,180
Less Income Taxes	150	408	558
Net Income	$ 350	$ 272	$ 622

Panel B: High-Transfer-Price Policy

	Manufacturing Affiliate (30% tax rate)	Distribution Affiliate (60% tax rate)	Consolidated Company
Sales	$2,600	$3,200	$3,200*
Less Import Tariff (10%)		260	260
Less Cost of Goods Sold	1,500*	2,600	1,500*
Less Operating Expenses	200*	100*	300*
Taxable Income	$ 900	$ 240	$1,140
Less Income Taxes	270	144	414
Net Income	$ 630	$ 96	$ 726

Notes: The basic numbers are the same as in Exhibit 19.7, except that the distribution affiliate now faces a 10% tariff on its imports. The numbers marked with an asterisk are the true revenues and costs and do not change with different transfer prices. All other numbers change with different transfer prices.

reduces its profitability because it keeps $1 - t_d$ of its income. Thus, each dollar increase in transfer price decreases the distribution affiliate's net-of-tax profit by $(1 + t) \times (1 - t_d)$ dollars per unit sold. Therefore, a high-transfer-price policy is optimal for the consolidated company as long as

$$(1 - t_m) > (1 + t) \times (1 - t_d)$$

which is the case in Exhibit 19.8. Alternatively, if

$$(1 - t_m) < (1 + t) \times (1 - t_d)$$

then a low-transfer-price policy maximizes the income of the consolidated company.

Example 19.1 Transfer Pricing with Tariffs

In Exhibit 19.8, $t_m = 30\%$, $t = 10\%$, and $t_d = 60\%$. Thus,

$$(1 - t_m) = 70\% > (1 + t) \times (1 - t_d) = 1.1 \times 40\% = 44\%$$

Hence, the high-transfer-price policy is optimal. By increasing the price from $2,200 to $2,600, the company saves

$$[(1 - 0.7) - (1.1)(1 - 0.6)] \times \$400 = \$104$$

Exhibit 19.8 indicates that the net income of the consolidated company increases by

$$\$726 - \$622 = \$104$$

Of course, in setting its transfer pricing policy, an MNC must be aware that it risks being charged with tax evasion if its transfer prices do not meet the arm's-length test. Clearly, ethical considerations matter in the setting of transfer prices. A firm must also be aware that possible future tax penalties, litigation, and bad publicity are the potential costs of setting transfer prices too aggressively.

Using Transfer Pricing to Deal with Foreign Exchange Quotas

Some countries set quotas on the amount of foreign exchange available for importing goods into the country. This makes the value of a unit of foreign exchange to a foreign affiliate in that country higher than the stated market price. However, the MNC can partially correct the economic distortion by lowering the transfer price. In this situation, a low transfer price allows the foreign subsidiary to import a greater quantity of goods into the country for a given amount of foreign currency. Conversely, high transfer prices can be used to access blocked funds, as we will discuss shortly.

Transfer Pricing in Joint Ventures

When a multinational corporation enters into a joint venture with a local corporation rather than setting up a wholly owned foreign subsidiary, the MNC is less likely to be able to utilize transfer pricing to its advantage. Like governments, joint-venture partners are likely to question manipulated transfer prices. For example, as we saw in Exhibit 19.7, a high transfer price charged to a joint-venture company will adversely affect the income it earns. This can lead to conflicts between the two firms and jeopardize their venture. Because joint ventures are often expensive to set up, this is usually not a good strategy.

Strategies for Dealing with Blocked Funds

In a fixed exchange rate system, devaluation pressures may cause the country's international reserves to dwindle, and the government may decide to ration access to foreign exchange rather than devalue its currency. An MNC operating in such a country experiences the rationing of foreign exchange along with anyone else holding the local currency who wants to buy foreign currency. This gives rise to the problem of blocked funds, which can be severe for an MNC. For example, an MNC's affiliate operating inside the country might need to acquire foreign currency to purchase imported raw materials or semi-finished goods integral to its production process. Without these goods, the affiliate might have to shut down its production. The foreign affiliate is also likely to be prohibited from making royalty and fee payments, except possibly at very unattractive foreign exchange rates. It is also quite likely that the parent will be unable to repatriate the affiliate's profits as dividends.

Because of these pitfalls, before investing in a foreign affiliate, a parent company should analyze the factors that might trigger a situation in which blocked funds would occur and how such a situation would affect the affiliate's profitability. The parent should also develop a contingency plan for how its foreign affiliate will operate within the country if such a problem develops.

Fronting Loans

One technique that a multinational corporation can use to increase the probability that its foreign affiliate will be able to transfer funds out of the country is to finance the foreign affiliate with a **fronting loan**. A fronting loan is a parent-to-affiliate loan that uses a large international bank as a financial intermediary. Rather than have the parent corporation lend directly to its foreign affiliate, the parent instead makes a deposit with an international bank, which makes a loan to the foreign affiliate that is equivalent to 100% of the deposited funds. From the bank's perspective, a fronting loan is risk free because the loan is fully collateralized by the parent's deposit. The bank willingly participates for a small fee, earned in the form of a spread between the deposit rate that is paid to the parent and the rate it charges the foreign affiliate.

Involving an international bank can potentially avert the adverse impact of a blocked-funds situation. Countries that ration foreign exchange often allow businesses to make some payments but not others. Interest and principal payments on intracompany loans from the foreign affiliate of an MNC operating in the country to its parent are generally given a lower priority by the government than interest and principal payments from the same foreign affiliate to an international bank in a neutral country. Although halting the payments made to large MNCs does have costs, the perceived costs are smaller than those incurred when a country stops allowing payments to major international banks.

International banks can refuse to finance a country's international trade or can hamper the government's ability to borrow funds, whereas MNCs can do little more than threaten not to invest in the country in the future. Fronting loans can also give an MNC a tax advantage. If the local government allows the foreign affiliate to take a tax deduction for interest paid on a bank loan but does not allow a tax deduction for interest paid on an intracompany loan, the use of a fronting loan creates a valuable interest tax shield.

For example, suppose a parent corporation wants to invest $1,000,000 in its foreign manufacturing affiliate. To simplify the analysis, let the parent make the transfer using a wholly owned financial affiliate that operates in a tax haven with no income tax. Suppose the financial affiliate charges a 7% interest rate on the intracompany loan. If the manufacturing affiliate cannot deduct the interest, the after-tax cost of the loan is $70,000 per year, which equals the income for the financial affiliate.

Now suppose the parent fronts the loan by transferring $1,000,000 from the financial affiliate to its foreign manufacturing affiliate. The financial affiliate would make a deposit of $1,000,000 to an international bank that would agree to pay 7% interest on the deposit. The bank, in turn, would make a loan to the foreign manufacturing affiliate, charging perhaps 8% interest. Let the income tax rate for the foreign manufacturing affiliate be 50%, and let the interest cost of the bank loan be deductible. Now, the foreign manufacturing affiliate owes $80,000 of interest to the bank, but the after-tax cost of this payment is only $40,000 because the interest payment is tax deductible. The bank gets $10,000 of income for its role as an intermediary. Once again, the financial affiliate is left with $70,000 of income, but the foreign manufacturing affiliate has to pay only $40,000 of after-tax income to achieve the transfer of $70,000 out of the country.

Reinvesting Working Capital Locally

When a government shuts off access to the foreign exchange market, it is trying to prevent capital from leaving the country. Governments also often place restrictions on nominal interest rates that can be offered in money markets. In such a situation, the yields on short-term money market instruments may produce negative real returns. When this happens, an MNC needs to try to find local investments that at least break even. The minimum goal of investing the profits of the local affiliate should be to maintain the real value of the existing principal. Toward this end, the local managers should be given the power to invest in any zero net present value investments. Because the local managers cannot be expected to be able to pick winners in the local economy, given the dire straits that it is in, any market-determined, zero net present value investment should be an acceptable investment from the parent corporation's point of view.

It is possible, however, that the firm may be able to invest in other products in the country that offer market-determined expected rates of return. These investments include the corporate bonds and the equities of other firms. If none of these investments appear to be attractive, the firm can engage in additional direct investment in the country. For example, the firm could purchase local real estate, either land or buildings. The firm can also pursue other real investments, including commodities, either for export or to add to its existing inventory, or it might construct additional facilities. Another way for a multinational corporation to use its working capital is to have a local affiliate contract with other firms operating in the country

to supply goods or to perform services for the parent or its other affiliates. For example, an architectural firm in a country with blocked funds could be hired to design a factory slated to be built by the parent.

Altering the Terms of Trade

Another tactic MNCs can use to get around the inconvertibility problem was illustrated by the Radisson Hotel chain in 1990, when it began building hotels in the former Soviet Union. Radisson began its foray into the former Soviet Union by first building a hotel in Moscow that accepted only convertible currencies. Then it added others that accepted rubles. Similarly, when McDonald's opened its first two restaurants in Moscow, one accepted rubles, but the other accepted only dollars. Both cases demonstrate how the two firms tried to overcome potential problems related to blocked funds. Although Radisson and McDonald's weren't already doing business in the former Soviet Union, such a strategy could have worked for a multinational that was.

Finally, when a firm knows that it is going to be operating in a country whose money is not fully convertible, it may be able to set up a trading operation to export unrelated products from that country. That is, the firm may be able to use a countertrade strategy.

19.4 Managing Accounts Receivable

A critical source of a multinational corporation's working capital is its accounts receivable. Any firm that decides to issue trade credit must therefore perform five tasks within the firm or hire an outside firm to do so.[4] First, the credit risk of the customer must be assessed. Second, the terms of the credit must be determined. These terms include the length of time between the sale and the payment and any interest penalties for late payments. Third, the receivable must be financed between the production and receipt of funds from the sale. Fourth, the receivable must be collected. Fifth, the firm must bear the default risk of the companies to which it extends credit. MNCs commonly extend credit to their customers, but the problems related to managing the company's accounts receivable are more complex for the MNC than a purely domestic firm. In addition to the five tasks just mentioned, the MNC also must decide the currency of denomination of its accounts receivable.

Currency of Denomination

An MNC must decide whether its foreign sales should be denominated in the domestic currency, in the currency of the foreign customer, or possibly in a third currency. Often, MNCs are advised to price their exports in hard currencies (ones that are likely to appreciate) and to denominate their imports in soft currencies (ones that are likely to depreciate). Does this advice make sense? If the two parties to a transaction agree on the distribution of future exchange rates and face the same cost of hedging, the advice is irrelevant. The currency of denomination of the sales contract then does not matter to the parties because there is a foreign currency price for the product that both parties agree is equal to the domestic currency price of the product. Let's look at an example to see why this is true.

[4]See Mian and Smith (1992) for a discussion of the economics of whether these five tasks should be done within the firm or contracted outside the firm. Alternative policies include doing everything within the firm, financing the receivables with secured debt, establishing a captive financial subsidiary, using a credit information firm, using a credit collection agency, using a credit insurance company, and using non-recourse factoring or recourse factoring.

Example 19.2 Pricing Airplanes for British Airways

Suppose Boeing enters into a contract to sell planes to British Airways. If the contract is denominated in dollars, British Airways will have to pay $100,000,000 in 1 year when the planes are delivered. With the deal denominated in dollars, British Airways is also confronted with the risk that the dollar will strengthen relative to the pound. Suppose that the spot exchange rate and the 1-year forward rate are as follows:

$$\text{Spot rate} = \$1.65/£$$
$$\text{1-year forward rate} = \$1.60/£$$

If British Airways does not want to bear the risk that the dollar will strengthen relative to the pound, it can contract to buy dollars forward with pounds at the forward rate of $1.60/£. In this case, British Airways converts its $100,000,000 account payable into a pound-denominated account payable of

$$\$100{,}000{,}000/(\$1.60/£) = £62{,}500{,}000$$

Notice that if Boeing denominates the deal in pounds, with payment again in 1 year, British Airways would be indifferent between paying £62,500,000 and hedging the $100,000,000 payment. Analogously, if Boeing denominates the deal in pounds and chooses not to bear the transaction foreign exchange risk, it would generate $100,000,000 in 1 year by charging £62,500,000 for the planes and selling that amount of pounds forward for dollars.

Example 19.2 demonstrates the important point that the currency of invoice really does not matter if the two parties have the same hedging opportunities and view exchange risk symmetrically. In negotiating a deal, though, it is often the case that the two parties do not have equal access to hedging opportunities. Also, in many circumstances, there are no well-developed forward markets. Money market hedges might not be available either because of the difficulty of securing loans in the foreign currency.

When hedging is impossible, one of the parties will be forced to bear the foreign exchange risk. Once again, though, if the two parties agree on the distribution of future exchange rates, and if the cost to each of the parties of bearing the risk is the same, there will be a foreign currency price that each party agrees is equivalent to the proposed domestic currency price.

If the parties disagree about the nature of the distribution of future exchange rates, or if the perceived cost to the parties of bearing the risk is not the same, the two parties will disagree about the foreign currency price that is equivalent to the possible domestic currency price. The next example demonstrates this point.

Example 19.3 Pricing Airplanes for Bangkok Airways

Suppose that Boeing is selling planes to a new Thai company, Bangkok Airways. Boeing must choose whether to denominate the contract in U.S. dollars or Thai baht. Suppose that the spot exchange rate is THB25/$ and that there is no forward market. Suppose there is a possibility that the baht will be devalued relative to the dollar during the next year. If Boeing prices in dollars, it will charge $100,000,000, and it will expect

payment in 1 year. In this case, Bangkok Airways has two choices. It can buy dollars today and invest them for 1 year if it wants to hedge, or it can bear the exchange risk that the baht will weaken relative to the dollar. In this case, we assume that it is financially infeasible for Bangkok Airways to buy dollars today because it cannot borrow the requisite amount of dollars or baht.

In order to analyze the values that the two parties attribute to the price quotes in the different currencies, we must understand each party's perceived distribution of future spot exchange rates. To summarize Bangkok Airways's and Boeing's probability distributions of future exchange rates in a simple way, assume that both parties think either the baht will remain at THB25/$ or the baht will be devalued. Suppose Bangkok Airways thinks there is a 50% probability the exchange rate will increase to THB40/$. Then, Bangkok Airways's expected future spot rate is

$$[0.5 \times (\text{THB25}/\$)] + [0.5 \times (\text{THB40}/\$)] = \text{THB32.5}/\$$$

Suppose Boeing also thinks that the exchange rate may increase to THB40/$, but Boeing believes there is a 55% probability of a devaluation. Hence, Boeing's expected future spot rate is

$$[0.45 \times (\text{THB25}/\$)] + [0.55 \times (\text{THB40}/\$)] = \text{THB33.25}/\$$$

When Boeing quotes a price of $100,000,000, Bangkok Airways expects to pay

$$(\text{THB32.5}/\$) \times \$100{,}000{,}000 = \text{THB3,250,000,000}$$

If Boeing quotes a price denominated in baht that is equivalent in expected value (from its perspective) to $100,000,000 in 1 year, it will quote

$$(\text{THB33.25}/\$) \times \$100{,}000{,}000 = \text{THB3,325,000,000}$$

Notice that Bangkok Airways would prefer to be invoiced in dollars because its expected value of the $100,000,000 when converted into baht is less than the sure baht payment that it would have to make if it were invoiced in baht.[5] If Bangkok Airways accepts the dollar-denominated payment, it will pay either THB2,500,000,000 if there is no devaluation or THB4,000,000,000 if there is a devaluation.

Examples 19.2 and 19.3 indicate that the decision about the currency in which to invoice cannot be made in isolation of the perceived probability distributions of future exchange rates, the opportunities that the parties have to hedge their foreign exchange risk, the determination of a local currency price for the product, and the riskiness of cash flows denominated in different currencies. If, in Example 19.3, Boeing were to place a probability on the devaluation that was lower than 50%, say 40%, its expected future spot rate would be

$$[0.6 \times (\text{THB25}/\$)] + [0.4 \times (\text{THB40}/\$)] = \text{THB31}/\$$$

Then, Boeing would quote

$$(\text{THB31}/\$) \times \$100{,}000{,}000 = \text{THB3,100,000,000}$$

[5]Notice that Bangkok Airways must compare a sure payment of baht in the future to an expected payment of baht in the future. To determine the baht cost today, it must take present values. Notice that Bangkok Airways will take the present value of a sure baht payment with the risk-free interest rate and the present value of an expected baht payment with an appropriate rate that reflects the systematic risk of the uncertain payment. If there is no systematic risk of the devaluation, the two payments can be compared with the baht risk-free rate. Analogously, Boeing would quote a baht price equal to the $100,000,000 times the expected value of the baht–dollar exchange rate only if the systematic risk of a devaluation of the baht relative to the dollar were zero.

as the baht price for its planes. Bangkok Airways would happily agree to be invoiced for THB3,100,000,000 rather than for $100,000,000, and Boeing would be left with the foreign exchange risk. Notice that if the true probability of devaluation were actually 50%, Boeing would have mispriced the deal.

Leading and Lagging Payments

MNCs make use of leading and lagging payments to manage the net working capital needs of their foreign affiliates. A **leading payment** is a payment made earlier than usual; a **lagging payment** is a delayed payment. By shortening and lengthening the payment cycle between related affiliates, an MNC can affect the liquidity of its affiliates around the world. Desai et al. (2008) find that MNCs routinely shift profits from one country to another to create an internal capital market for their affiliates.

For example, suppose the British affiliate of an MNC typically sells $2 million worth of goods each month to the German affiliate of the MNC. When the sale takes place, the British affiliate extends an account receivable to the German affiliate, which books an account payable. For each additional 30 days that the accounts receivable and payable are extended, the German affiliate obtains an additional $2 million worth of financing from the British affiliate. Net working capital is increased at the British affiliate, and it is reduced at the German affiliate.

What are the determinants of leading and lagging? First, and foremost, the MNC must understand the opportunity costs associated with the net working capital of its affiliates. This interest rate must be based on a common currency, such as the dollar, and it should be calculated on an after-tax basis. Funds should then be moved from affiliates that have low opportunity costs of net working capital to affiliates that have high opportunity costs.

Of course, the interest rate at which an affiliate can borrow in the short-term money market is substantially above the interest rate at which it can lend. If all borrowing rates are above all lending rates, the movement of funds through leading and lagging is simple. Funds should be moved from affiliates that are lending to the short-term money market to affiliates that are borrowing from short-term money markets. This is done by allowing the affiliates that are borrowing to lag their payments to the affiliates that are lending and by having the affiliates that are lending accelerate their payments to the affiliates that are borrowing.

The problem is only slightly more complicated if all the affiliates have surplus funds. Then, the affiliate with the best investment opportunity should receive accelerated payments from the other affiliates. In contrast, if all the affiliates have deficits of funds and are therefore borrowing, the MNC should attempt to borrow as much as possible through the affiliate that has the lowest borrowing cost.

The following example provides a numeric illustration of this issue.

Example 19.4 Different Borrowing and Lending Rates for Different Affiliates

Suppose the dollar borrowing and lending rates for a U.S. parent and its British affiliate for 90-day periods are as follows:

	Borrowing Rate (in percent per annum)	Lending Rate (in percent per annum)
U.S. Parent	8.0	7.0
British Affiliate	8.2	6.9

At the margin, both the U.S. parent and its British affiliate can have either positive short-term funds that they want to invest or short-term borrowing requirements.

Consequently, four situations must be considered. In each of these four situations, we can determine which direction funds should flow and the return to the MNC of transferring $1 million:

1. **The U.S. parent has surplus funds, and the British affiliate must borrow:** The U.S. parent can invest funds at 7%, whereas the British affiliate borrows at 8.2%. Clearly, the U.S. parent should lend funds to the British affiliate. For each $1 million transferred for 90 days, the MNC saves

$$\$1{,}000{,}000 \times (8.2 - 7)/100 \times (90/360) = \$3{,}000$$

2. **The U.S. parent must borrow, and the British affiliate has surplus funds:** The U.S. parent borrows funds at 8.0%, whereas the British affiliate earns only 6.9% on its lending. Clearly, the British affiliate should lend to the U.S. parent. For each $1 million transferred for 90 days, the MNC saves

$$\$1{,}000{,}000 \times (8.0 - 6.9)/100 \times (90/360) = \$2{,}750$$

3. **Both the U.S. parent and the British affiliate have surplus funds:** Because both the U.S. parent and the British affiliate have funds to invest, we merely compare what they can earn. The U.S. parent can earn 7%, whereas the British affiliate can only earn 6.9%. Clearly, funds should flow from the British affiliate to the U.S. parent. For each $1 million transferred for 90 days, the MNC earns

$$\$1{,}000{,}000 \times (7 - 6.9)/100 \times (90/360) = \$250$$

4. **Both the U.S. parent and the British affiliate must borrow:** Because both the U.S. parent and the British affiliate must borrow, we merely compare their respective borrowing rates. The U.S. parent borrows at 8.0%, whereas the British affiliate borrows at 8.2%. Clearly, funds should flow from the U.S. parent to the British affiliate. For each $1 million transferred over 90 days, the corporation saves

$$\$1{,}000{,}000 \times (8.2 - 8.0)/100 \times (90/360) = \$500$$

Of course, governments are aware of the incentives that multinational corporations have to engage in leading and lagging of payments. Consequently, they regulate the credit terms that can be extended across borders.

Credit Terms

An MNC can extend credit not only to its affiliates but also to its customers. How does an MNC decide on the terms of payments for its customers?

Fundamentally, the optimal policy involves increasing the term of an account receivable and reducing the interest charge until the marginal benefit of the affiliate's increased sales equals the marginal costs imposed by the five tasks involved in managing accounts receivable (mentioned at the outset of our discussion). The better the credit terms an MNC offers, the more sales it is likely to make. In changing terms, the firm must be sure that today's sale on credit actually contributes positive expected future cash flow. Quoting easier credit terms can attract undesirable buyers who are slow to pay or who default on their payments.

Credit assessment is costly, so the longer the term of the credit, the more extensive should be the investigation of the creditworthiness of the customer. Collecting what is owed is also costly, as is financing the accounts receivable. Increasing accounts receivable uses cash that could be used to finance other productive projects, if it could be collected, and increases the default risk that the firm faces.

If an MNC has a lower cost of capital than its local customers, the MNC can increase its profits by extending relatively long credit terms to its customers and charging them financing fees. It makes sense for the MNC to finance the inventory of its customers if the MNC can charge a cheaper rate than the customer would be charged by local banks. Of course, the MNC must assess the default risk of its customers. The higher interest rate or limited borrowing capacity of a local customer might simply reflect a high default risk associated with doing business with the customer rather than a shortage of funds from local sources.

One advantage that a multinational corporation may have over a bank is that the collateral used to secure the loan may be worth more to the MNC than it is to a bank. If the account receivable is not repaid, the MNC should be able to repossess the merchandise and possibly resell it on more favorable terms than a bank could. The MNC might also have better information about the default risk of its customers than a bank has because it is in a related business.

19.5 Inventory Management

As explained earlier, inventories are held to smooth the production process and to make sure that goods are available for customers when their orders arrive. But inventory is costly for a firm to hold because the stocks of inventories are the firm's assets, and they must be financed. If the firm's cost of capital is 15% and the firm is holding $100,000,000 of inventory, its annual financing cost is $15,000,000. The inventories also must be stored in a safe place, which requires warehouses and personnel to manage the storage. The firm is also exposed to losses in the event that the inventory is stolen or destroyed as a result of a fire or another natural disaster, or if it becomes obsolete. Of course, the firm can purchase insurance to guard against these risks, but there is a direct cost of doing so. Finally, inventories can lose value if the market prices of the goods fall. Commodities such as raw materials used in manufacturing are especially vulnerable to price drops.

So how does a firm decide how much inventory to hold? Optimal inventory theory, discussed next, can help a firm formulate a policy.

Optimal Inventory Theory

A firm should increase its inventory until the marginal benefit arising from reduced production costs and increased sales revenue equals the marginal cost of storing and financing the inventories. Although the inventory management problems multinational firms face are similar to those faced by purely domestic firms, the volatility of prices and exchange rates makes determining an optimal policy even more challenging for an MNC.

Devaluation or Depreciation Risk

Managers of foreign subsidiaries are often confronted with the risk of devaluation or depreciation of the local currency. This risk raises the question of whether additional inventory from foreign suppliers should be purchased prior to a devaluation of the local currency relative to the foreign currency. A naïve answer to this question would appear to be "yes." After all, the local currency price of the inventory will rise after the devaluation. But let's examine this issue in more detail to gain insight about the balancing of marginal costs and marginal benefits.

Consider a two-period model in which a German subsidiary of a U.S. firm buys some imported goods today to place in inventory, and the subsidiary sells the goods in Germany in the next period. The German firm can borrow in euros to buy the goods, which are priced in dollars, and the company incurs a euro-denominated storage cost that increases with the amount of goods stored. Because the parent corporation is a U.S. firm, the objective of the German subsidiary is to maximize its dollar profit in the second period. Assume that the markets for both the imported goods and the final goods are competitive, so the firm cannot influence the prices of these goods by the amounts that it buys or sells.

To facilitate the analysis, let the dollar–euro exchange rate at time t be $S(t, \$/€)$, let $P(t, \$)$ be the dollar price of the imported good at time t, let $P(t, €)$ be the euro retail price of the good at time t, let $i(t, €)$ be the euro interest rate that will be paid at time t+1, and let $C(t+1, €)$ be the euro-denominated marginal storage cost that is increasing in the amount of inventory. Let's build up the equilibrium condition in steps.

The expected dollar revenue from selling a unit of the good next period is

$$E_t[S(t+1, \$/€) \times P(t+1, €)] \tag{19.1}$$

The expected marginal cost from buying the good on credit and storing the good for one period has two parts. The euro cost of the good at time t is $P(t, \$)/S(t, \$/€)$, which must be borrowed and repaid with interest at time t+1. Hence, the dollar value of the euro interest plus principal at time t+1 is

$$S(t+1, \$/€) \times \frac{P(t, \$)}{S(t, \$/€)} \times (1 + i(t, €)) \tag{19.2}$$

The firm must also pay the dollar value of the marginal storage cost, $S(t+1, \$/€) \times C(t+1, €)$.

The equilibrium condition that determines the optimal inventory of goods imported into Germany requires that the expected marginal dollar revenues at time t+1 in Equation (19.1) equal the expected dollar marginal cost in Equation (19.2) plus the expected marginal storage cost.

Consider the equilibrium implications. On the revenue side, the important point is whether the local-currency prices in the retail market, $P(t+1, €)$, will increase to keep pace with any depreciation of the local currency as $S(t+1, \$/€)$ falls with a depreciation of the euro. If retail prices are expected to increase faster than the rate of depreciation, this force would motivate managers to purchase a larger amount of inventory, other things being equal. If, on the other hand, a depreciation of the euro will be accompanied by a price freeze, the expected increase in the retail price is less than the expected rate of depreciation of the local currency. This would motivate managers to purchase a smaller amount of inventory.

Now, let's look at how a possible depreciation of the euro would affect the firm's marginal costs in Equation (19.2). If local interest rates fail to increase sufficiently to reflect the expected depreciation, the firm's marginal costs will be lower, and larger inventories should be purchased. On the other hand, if interest rates are higher than warranted by the expected depreciation, the firm's inventory carrying costs will be high, and smaller inventories should be purchased.

Finally, consider the expected marginal storage costs. If marginal costs are expected to be low, possibly because the firm's warehousing costs are fixed in nominal terms, this would cause the firm to choose larger inventories. In contrast, if the firm's workers are likely to strike for increased wages after the depreciation, smaller inventories are optimal.

In summary, the prospects of a depreciation of a local currency are insufficient in and of themselves to warrant an increase in inventories. Only by balancing the anticipated marginal benefits and anticipated marginal costs of holding the inventory can we arrive at the optimal stock. What will happen to future retail prices and whether nominal interest rates will accurately and rationally reflect the probabilities of devaluation are equally as important as the fact that the local currency is expected to depreciate.

POINT–COUNTERPOINT

Planning for a Dinjonasian Devaluation

Ante, Freedy, and Suttle are again visiting their Uncle Fred, the importer–exporter. Uncle Fred is explaining that last year, he set up a textile manufacturing plant in Tajarka, Dinjonasia. The plant produces really cheap v-neck cotton T-shirts that are the rage in California. Uncle Fred is trying to figure out how to respond to a request from his Dinjonasian plant manager, Mr. Ibrahim.

"This e-mail from Ibrahim has me puzzled," says Uncle Fred. "He thinks the Dinjonasian rupiah (DJR) is going to crater versus the dollar sometime within the next year, and I agree. The latest figures show the stock of international reserves of Bank Dinjonasia at $32 billion, and they're losing over $4 billion per month intervening in support of the rupiah. At that rate of loss, they've got less than 8 months to figure out what to do before a devaluation of the rupiah is forced upon them. Ibrahim is worried that I'll fire him when the plant is less profitable after the devaluation. Last year, he made a profit of DJR8,100,000,000, which sounds impressive, but it only converted to USD900,000 at the fixed exchange rate of DJR9,000/USD. If the rate goes to DJR12,000/USD, as the media are anticipating, he'll only produce profit of

$$\frac{\text{DJR8,100,000,000}}{(\text{DJR12,000/USD})} = \$675{,}000$$

Uncle Fred continues, "Ibrahim wants to speculate to protect the dollar value of his budget. The stumbling block to this plan is that the Dinjonasian government has frozen forward trading in the rupiah—basically outlawing the forward market. I understand that he could sell rupiah forward for dollars and make a killing after the rupiah crashes, but if he can't do that, what can he do? I'm obviously not going to fire him for something that is out of his control."

"Well, he should be worried about his job if all that he can think of is forward contracts," shouts Ante. "There are lots of other ways to speculate against the rupiah." "Name one," comes the cry from Freedy. "You're asleep in international finance most times I look."

Ante thinks for a second and responds, "Well, you could always have Ibrahim buy some extra inventory. Doesn't he get his cotton from Egypt? The dollar value of the cotton is set on world markets, and if he buys cotton before the devaluation, its rupiah value will increase with the devaluation."

Uncle Fred interjects, "Ante, that's a good suggestion, but what if the price of cotton falls in a few months? I've heard the Egyptians think there will be a huge harvest, and the price of cotton has consequently been trending downward for the past 2 weeks. I think cotton prices are going to fall 20% to 30% in the next 6 months. We could find ourselves with some really high-priced cotton on the books, which wouldn't look so good either. I think I'll just tell Ibrahim not to worry."

"Wait a minute," says Freedy. "Can't Uncle Fred do some leading and lagging of payments? It seems to me that he should maximize his dollar assets. That means lengthening out the Dinjonasian plant's accounts receivable that are denominated in dollars and shortening the plant's accounts payable. Uncle Fred should delay paying Ibrahim for the shirts, and Ibrahim should accelerate the payment of management fees and royalties to Uncle Fred. What would happen if everybody did that?"

Suttle interjects, "Freedy, you're right on the mark. Even though Bank Dinjonasia has tried to prevent speculation in the capital markets, all commercial firms will have an incentive to accelerate their purchases of dollars with rupiah and to delay their sales of dollars for rupiah. If you're going to buy dollars for some legitimate international trade purpose, you'd rather do it at DJR9,000/USD than at DJR12,000/USD. Similarly, if you can delay converting out of dollars into rupiah until after the devaluation, you'll get the capital gain. Of course, there may be a run on the reserves of Bank Dinjonasia, even with all the capital market controls in place. Leading and lagging international payments can have a first-order effect on the flow of international reserves, much to the displeasure of central bankers."

Ante and Freedy nod approvingly, but Uncle Fred shakes his head and interjects, "Suttle, don't you have to worry about interest rates in these strategies?"

Suttle smiles and says, "You certainly do, Uncle Fred! If the interest rates in Dinjonasia anticipate a devaluation, the leading/lagging strategy my be costly to implement and may backfire if the devaluation ultimately doesn't materialize."

19.6 Summary

This chapter explores issues related to managing a multinational corporation's net working capital. The main points in the chapter are as follows:

1. Net working capital is the difference between a firm's current assets of cash, marketable securities, accounts receivable, and inventories and its current liabilities. An increase in the stock of net working capital is an investment.
2. The goals of an international money manager of a multinational corporation are to establish control over the cash resources of the organization, to invest excess short-term funds in an optimal way, and to obtain short-term financing at the lowest cost.
3. Managing cash from a centralized pool of resources can reduce a firm's costs by minimizing its transaction costs and by optimizing the currency of denomination and the maturity of any of its investments or borrowing.
4. A multilateral netting system reduces transaction costs between the affiliates of a multinational corporation by eliminating gross transfers and substituting net transfers that take account of what is owed among them.
5. The precautionary demand for money arises because a firm cannot perfectly match its current production to its current sales. A centralized cash management system can improve a multinational corporation's cash flows by exploiting the fact that the demands for cash by different affiliates are less than perfectly correlated.
6. The primary cash transfers that foreign affiliates make to their parent corporations are dividends. Other cash transfers to the parent include royalties, fees, and payments related to transfer prices. The parent should plan how it will repatriate the profits it earns from its affiliates and how it will minimize the taxes owed on the profits.
7. Transfer prices are the prices that a firm charges its affiliates when selling goods and services to them. Because transfer prices are set internally, it is often difficult to determine whether a particular transfer price is close to what would be set in a competitive market.
8. Higher transfer prices shift income and tax burdens from distribution affiliates to manufacturing affiliates. Lower transfer prices shift income and tax burdens from manufacturing affiliates to distribution affiliates.
9. In the United States, the IRS specifies that an appropriate transfer price is one that reflects an arm's-length price—that is, the price a seller would charge to an unrelated buyer.
10. Prior to investing in a foreign affiliate, a parent company should analyze the factors that might trigger blocked funds and how such a situation would affect the affiliate's profitability. The parent should also develop a contingency plan for how the affiliate would operate within the country if such a problem developed.
11. A fronting loan is a parent-to-affiliate loan that uses a large international bank as a financial intermediary. Such a loan helps an MNC avoid the adverse effects of potential blocked-funds situations and results in valuable interest tax shields.
12. A critical source of a multinational corporation's working capital is its accounts receivable. A firm that issues credit must assess the credit risk of its customers and determine the terms of the credit. The firm must also finance its accounts receivable and bear the risk associated with them and the costs of collecting them. The appropriate terms of credit balance the marginal benefits the firm receives from the increased sales it makes on credit with the marginal costs it incurs extending credit.
13. The appropriate currency of denomination of accounts receivable cannot be determined without understanding the perceived distributions of future exchange rates of each party, the opportunities that the parties have to hedge their foreign exchange risk, the determination of a local currency price for the product, and the riskiness of the cash flows denominated in different currencies.
14. Leading and lagging the payments made between its affiliates allows an MNC to affect the liquidity of the affiliates and to speculate on changes in exchange rates.
15. Stocks of inventories, consisting of raw materials, work-in-progress, and finished goods, are held to smooth production and to make sure that goods are available for customers when orders arrive. The benefits of holding inventories arise from better production planning and a reputation for reliability in supplying products. These benefits must be balanced at the margin against the storage, insurance, and financing costs inherent in holding inventories.

QUESTIONS

1. What is net working capital? Why should it be considered an investment that a firm must make to increase its future profitability?
2. What distinguishes international cash management from purely domestic cash management? In particular, what constraints arise in the international environment?
3. Why is it important for a foreign affiliate to have a well-defined dividend policy for repatriating profits to its parent corporation?
4. What is the difference between a royalty and a fee?
5. What are the determinants of leading and lagging payments between related international affiliates?
6. What principles determine the appropriateness of transfer prices under U.S. regulations?
7. How can transfer pricing be used to shift income around the world?
8. How can transfer pricing be used to avoid tariffs?
9. What are blocked funds? How can a corporation structure its foreign affiliates to mitigate problems with blocked funds?
10. What is a fronting loan? How does its structure potentially create value for a multinational corporation?
11. Why is the threat of devaluation an insufficient reason for a firm to build up its stocks of inventories?
12. What are the five tasks involved in issuing trade credit?
13. What is wrong with the rule that firms should invoice their customers in hard currencies?
14. Why does it make sense for a multinational corporation to allow its foreign customers to pay on credit if there is rationing in the foreign credit market?

PROBLEMS

1. Euroshipping Corporation maintains separate production and distribution facilities in Sweden, France, Spain, and Italy. The corporate headquarters is in France. As a consultant to the treasurer of Euroshipping, you have been asked to estimate how much money the firm could save by creating a centralized cash management pool. Currently, each affiliate maintains precautionary cash balances equal to three standard deviations above its expected demand for cash.

Affiliate	Mean Demand for Money	One Standard Deviation
Swedish	€25,000,000	€7,000,000
French	€50,000,000	€13,000,000
Italian	€35,500,000	€10,000,000
Spanish	€20,000,000	€6,000,000

   By how much could Euroshipping reduce its overall demand for cash if it were to create a centralized cash pool for the four affiliates? (Assume that the cash needs are normally distributed and are independent of each other.)
2. Euroshipping is also considering developing a multilateral netting system.
   a. Given the cumulative monthly payments in the following payments matrix, derive the minimum transfers that could be made.

Euroshipping Intracompany Payments Matrix (in millions of euros)

Receiving Affiliate	Paying Affiliate			
	Swedish	French	Italian	Spanish
Swedish	—	16	14	18
French	19	—	12	15
Italian	22	7	—	11
Spanish	9	15	3	—

   b. If the transaction costs on these fund transfers are 0.45%, how much would the company save by switching to a multilateral netting system?
3. Suppose the euro borrowing and lending rates for a German parent and its Spanish affiliate for a 90-day period are as follows:

	Borrowing Rate (in percent per annum)	Lending Rate (in percent per annum)
German Parent	9.3	8.1
Spanish Affiliate	9.6	7.9

   In each of the following cases, determine the direction funds should flow and the return to the MNC of transferring EUR1,000,000:
   a. The German parent has positive funds; the Spanish affiliate has negative funds.

b. The German parent has negative funds; the Spanish affiliate has positive funds.
c. The German parent has positive funds; the Spanish affiliate has positive funds.
d. The German parent has negative funds; the Spanish affiliate has negative funds.

4. Consider a situation in which a manufacturing affiliate is selling to a distribution affiliate. The relevant tax information, operating expenses, and cost of goods sold are given in the following table. Fill out the entries in the table and determine how the overall income of the consolidated company would change if it were to increase the transfer price by $500:

	Manufacturing Affiliate (35% tax rate)	Distribution Affiliate (55% tax rate)	Consolidated Company
Sales	$4,500	$5,700	
Less Cost of Goods Sold	2,600		
Less Operating Expenses	1,000	450	
Taxable Income			
Less Income Taxes			
Net Income			

5. If a manufacturing affiliate faces a 55% income tax rate, and its distribution affiliate faces a 40% income tax rate and a 15% import tariff, should transfer prices be high or low?
6. Caterpillar is selling earthmoving equipment to an Indonesian construction company. Caterpillar must choose whether to denominate the contract in U.S. dollars or in Indonesian rupiah. Suppose that the spot exchange rate is IDR9,150/$ and that there is no forward market. Suppose, too, that there is a possibility that the rupiah will be devalued relative to the dollar during the next year. If Caterpillar prices the contract in dollars, it will charge $15,000,000 and will expect to be paid in 1 year. It is also willing to discuss pricing the machines in rupiah. The Indonesian firm thinks that there is a 60% chance the exchange rate will remain the same and a 40% chance it will increase to IDR9,300/$. Caterpillar thinks that there is a 65% probability of the exchange rate remaining the same and a 35% probability that it will increase to ID9,450/$. How should the deal be priced, and who will bear the risk of devaluation of the rupiah?
7. Web Question: Go to the PwC Web site related to transfer pricing at www.pwc.com/gx/en/international-transfer-pricing and download the latest version of their manual on international transfer pricing. Determine how Venezuela handles transfer pricing and what the penalties are for non-compliance.

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