

Chapter 10

Exchange Rates and International Trade

FOREIGN EXCHANGE TRANSACTIONS

An exchange rate is the number of units of a given currency that can be purchased for one unit of another currency. It is a common practice in world currency markets to use the indirect quotation, that is, quoting all exchange rates (except for the British pound) per U.S. dollar. *The Financial Times* foreign exchange data for September 16, 2006, for example, shows the quotation for the Canadian dollar as being 1.1218 per one U.S. dollar. Direct quotation is the expression of the number of U.S. dollars required to buy one unit of foreign currency. The direct U.S. dollar quotation on September 16, 2006, for the Canadian dollar was U.S. \$0.89. Although it is common for foreign currency markets around the world to quote rates in U.S. dollars, some traders state the price of other currencies in terms of the dealer's home currency (cross rates), for example, Swiss francs against Japanese yen, Hong Kong dollar against Colombian pesos, and so on (see Table 10.1). Strictly speaking, it is reasonable to state that the rate of the foreign currency against the dollar is a cross rate to dealers in third countries.

The foreign exchange market is a place where foreign currency is purchased and sold. In the same way that the relationship between goods and money in ordinary business transactions is expressed by the price, so the relationship of one currency to another is expressed by the exchange rate. A large proportion of the foreign exchange transactions undertaken each day is between banks in different countries. These transactions are often a result of the wishes of the banks' customers to consummate commercial transactions, that is, payments for imports or receipts for exports. Other reasons for individual companies or governments to enter into the foreign

TABLE 10.1. Currency Trading, Monday, August 21, 2006

Selected Countries	Indirect Quotation Currency per U.S. \$	Cross Rates (per Yen/per Lira)
Canada	1.12	0.00971/0.7710
France	0.78	0.00674/0.5348
Germany	0.78	0.0049/0.3636
United Kingdom	0.53	0.0049/0.3636
Japan	—	—/0.125
U.S.	115.74	0.0084/0.6901

Source: Adapted from CNN Money, 2006.

exchange market as buyers or sellers of foreign currencies include the following:

- Foreign travel and purchase of foreign stocks and bonds; foreign investment; receipt of income such as interest, dividends, royalties, and so on, from abroad; or payment of such income in foreign currency.
- Central banks enter the foreign exchange market and buy or sell foreign currency (in exchange for domestic currency) to stabilize the national currency, that is, to reduce violent fluctuations in exchange rates without destroying the viability and freedom of the foreign exchange market.
- Speculation, that is, purchase of foreign currency at a low rate with the hope to sell it at a profit.

Foreign exchange trading is not limited to one specific location. It takes place wherever such deals are made, for example, in a private office or even at home, far away from the dealing rooms or facilities of companies. Most of these transactions are carried out between commercial banks and their customers as well as among commercial banks themselves, which buy and sell foreign currencies in response to the needs of their clients. For example, a Canadian bank sells Canadian dollars to a French bank in exchange for French francs. This transaction, in effect, allows the Canadian bank the right to draw a check on the French bank for the amount of the deposit denominated in francs. Similarly, it will enable the French bank to draw a check in Canadian dollars for the amount of the deposit (DeRosa, 1991).

Foreign exchange rates are based on the supply and demand for various currencies, which, in turn are derivatives of the fundamental economic

factors and technical conditions in the market (Salvatore, 2005). In the United States, for example, the continuous deterioration in the trade deficit in the 1970s, mainly due to increased consumption expenditures on foreign goods, led to an oversupply of dollars in foreign central banks. This in turn resulted in a lower dollar in foreign exchange markets. Besides a country's balance of payments position, factors such as interest rates, growth in the money supply, inflation, and confidence in the government are important determinants of supply and demand for foreign currencies and, hence, the exchange rate. The following are some examples (see also Table 10.2):

- The U.S. dollar depreciated substantially against the Euro and other major currencies over the recent period partly due to interest rate tightening by the European Central Bank, and high U.S. trade and budget deficits. Since the end of 2002, for example, the dollar has lost about half of its value against the Euro. Currency traders buy currencies of countries with high interest rates in order to maximize their investment returns and sell those currencies with low interest rates.
- The Mexican peso has been appreciating in 2006 due to an increase in the inflow of funds resulting from the rise of international oil prices. The increase of foreign investment in the country has also contributed to the rise in value of the peso, thus causing a reduction in its current account deficit and foreign debt.
- The Indonesian currency, the rupiah, has appreciated in value since 2004 due to political stability and steady economic growth.

Exchange rate fluctuations can have a profound effect on international trade. Export-import firms are vulnerable to foreign exchange risks whenever they enter into an obligation to accept or deliver a specified amount of foreign currency at a future point in time. These firms are then faced with a prospect that future changes in foreign currency values could either reduce the amount of their receipts or increase their payments in foreign currency. A U.S. importer of Japanese components, for example, took a \$1 million loss when the dollar took an unexpected fall against the yen in 1993, wiping out a significant portion of the company's profits. In some cases, it may also be that such changes will bring about financial benefits. In the previous example, the U.S. importer could have reduced its payments in dollars if the yen had depreciated against the dollar.

The most important types of transactions that contribute to foreign exchange risks in international trade include the following:

- Purchase of goods and services whose prices are stated in foreign currency, that is, payables in foreign currency

- Sales of goods and services whose prices are stated in foreign currency, that is, receivables in foreign currency
- Debt payments to be made or accepted in foreign currency

Most export-import companies do not have the expertise to handle such unanticipated changes in exchange rates. Banks with international trade capabilities and consultants can help assess currency risks and advise companies to take appropriate measures.

The impact of exchange rate fluctuations on export trade can be illustrated by the following example. Since the dollar began to decline in January 2002, many European and Asian exporters to the U.S. market have been faced with the difficult task of balancing the need to increase prices to preserve profit margins and the importance of keeping prices stable to maintain market shares. Wholesale prices for Heineken beer, for example, have only been increased twice by a mere 2.5 percent. Many exporters have been reluctant to increase the prices of their exports to fully offset the decline in the dollar. Some have responded by shifting factories to North America in order to cushion them from currency fluctuations. Prominent examples include the establishment of production facilities by DaimlerChrysler in Alabama, BMW in South Carolina, and so on.

The impact of exchange rate risks is felt more by export-import companies than domestic firms. To the extent that an exporter's inputs are domestic, a strong domestic currency could lead to loss of domestic and foreign markets. Importers also face a loss of domestic markets due to the rise in the price of imports if the domestic currency weakens. In addition, such firms are

TABLE 10.2. Relative Position of Major Currencies, 2002 (percentages)

Currency	Foreign Exchange Trading	International Bank Loans	International Bond Offering	Trade Invoicing	Foreign Exchange Reserves
U.S. dollar	45.20	50.30	48.40	52.00	64.80
Euro	18.80	51.00	44.30	24.80	14.60
Japanese yen	11.40	-7.60	1.20	4.70	4.50
Pound sterling	6.60	4.30	5.20	5.40	4.40
Swiss franc	3.10	0.40	-0.20	n/a	0.70
Others	14.90	1.60	1.10	13.10	11.00

Source: Bank for International Settlements, March, 2002; IMF, IMF Annual Report, 2003.

vulnerable to exchange risks arising from receivables or payables in foreign currency (see International Perspective 10.1 for impact of exchange restrictions).

PROTECTION AGAINST EXCHANGE RATE RISKS

There are several ways in which export-import companies can protect themselves against unanticipated changes in exchange rates. The risk associated with such transactions is that the exchange rate might change between the date when the export contract was made and the date of payment (the settlement date), which is often sixty to ninety days after contract or shipment of the merchandise.

Shifting the Risk to Third Parties

Hedging in Financial Markets

Through various hedging instruments, firms could reduce the adverse impact of foreign currency fluctuations. This allows firms to lock in the

INTERNATIONAL PERSPECTIVE 10.1. Exchange Restrictions

There are only a few countries that impose no restrictions on the use of the foreign exchange market. This means that their currency is fully convertible into foreign currency for all uses: for trade in goods and services, as well as international financial activities. Many Western economies such as Canada, the United States, Japan, the United Kingdom, and Germany, have convertible currencies. Currencies of most developing and former communist nations, however, are either not convertible or legally convertible only at artificial, government-established rates. Such exchange restrictions may be imposed for competitive reasons (keeping a lower value), to promote foreign investment, or to discharge debt payments (maintaining a high value). The most extreme form of exchange restrictions (control) is limitation of the availability of foreign currency to purchase imports. Limits could also be placed on the use of foreign currency for certain transactions, such as imports of luxury goods, to conserve foreign currency. In terms of exports, exchange control rules could require that exports are properly paid for and payment is forthcoming within a reasonable time, that is, proceeds from exports are to be repatriated to the country's bank within a given period of time after shipment.

exchange rate today for receipts or payments in foreign currency that will happen sometime in the future. Current foreign exchange rates are called spot prices; those occurring at some time in the future are referred to as forward prices. If the currency in question is more expensive for forward delivery (for delivery at some future date) than for ordinary spot delivery (i.e., for delivery two business days following the agreed-upon exchange date), it is said to be at a premium. If it is less expensive for forward delivery than spot delivery, it is said to be at a discount.

In Table 10.3, the forward krone is at a premium since the forward krone is more expensive than the spot. The forward Canadian dollar is at a discount because its forward price is cheaper than spot. When viewed from the point of view of the U.S. dollar, it can also be stated that the forward dollar is at a discount in relation to the krone or that the forward U.S. dollar is at a premium in relation to the Canadian dollar.

It is pertinent to underscore some salient points about hedging in foreign exchange markets:

- *Hedging is not always the most appropriate technique to limit foreign exchange risks:* There are fees associated with hedging, and such costs reduce the expected value from a given transaction. Export-import firms should seriously consider hedging when a high proportion of their cash flow is vulnerable to exchange rate fluctuations. This means that firms should determine the acceptable level of risk that they are willing to take. In contrast, firms with a small portion of their total cash exposed to foreign exchange rate movements may be better off playing the law of averages—shortfalls could be eventually offset by windfall gains.
- *Hedging does not protect long-term cash flows:* Hedging does not insulate firms from long-term adjustments in currency values (O'Connor and Bueso, 1990). Thus, it should not be used to cover anticipated changes in currency values. A U.S. importer of German goods would have found it difficult to adequately hedge against the predictable fall of the dollar during the 1973-1980 period. The impact of such action is felt in terms of higher dollar prices paid for imports.
- *Forward market hedges are available in a very limited number of currencies:* Most currencies are not traded in the forward market. However, many countries peg their currency to that of a major industrial country whose currency is traded in the forward market. Many Latin American countries, for example, peg their currencies to the U.S. dollar. This insulates U.S. firms from foreign exchange risk in these countries unless the country changes from the designated (pegged)

official rate. Foreign firms, that is, non-U.S. firms, in these countries can reduce potential risks by buying or selling dollars (in the event of purchases or sales to these countries) forward as the case may be.

Example 1. Suppose the Colombian peso is pegged to the U.S. dollar at \$1 = 1,000 pesos. A British firm that is to make payment in pesos for its imports from Colombia, could hedge its position by buying U.S. dollars forward. On the settlement date, pounds will be converted into dollars, which, in turn, could be converted into pesos. This assumes that Colombia does not change the pegged rate during the period.

- *Hedging should not be used for individual transactions:* Since most export-import firms engage in transactions that result in inflows and outflows of foreign currencies, the most appropriate strategy to reduce transaction costs is to hedge the exported net receivable or payable in foreign currency.

Example 2. Suppose a Canadian firm has receivables from two Japanese buyers amounting to five million yen and payables to four Japanese suppliers worth nine million yen. Instead of hedging all six transactions, the Canadian firm should cover only the net short position (i.e., four million yen) in yen. This reduces the transaction cost of exchanging currencies for the firm.

Spot and Forward Market Hedge

As previously noted, a spot transaction is one in which foreign currencies are purchased and sold for immediate delivery, that is, within two business days following the agreed-upon exchange date. The two-day period is intended to allow the respective commercial banks to make the necessary transfer. A forward transaction is a contract that provides for two parties to exchange currencies on a future date at an agreed-upon exchange rate. The forward rate is usually quoted for one month, three months, four months, six months, or one year. Unlike hedging in the spot market, forward market

TABLE 10.3. Hypothetical Exchange Rates, Currency per U.S. Dollar

	Danish Krone	Canadian Dollar
Spot rate	1.8037	1.4257
Thirty-day forward	1.7948	1.4296
Ninety-day forward	1.7887	1.4273

hedging does not require borrowing or tying up a certain amount of money for a period of time. This is because the firm agrees to buy or sell the agreed amount of currency at a determinable future date, and actual delivery does not take place before the stipulated date.

Example 1: Spot market hedge. On September 1, a U.S. importer contracts to buy German machines for a total cost of 600,000 euros. The payment date is December 1. When the contract is signed on September 1, the spot exchange rate is \$0.5000 per euro and the December forward rate is \$0.5085 per euro. The U.S. importer believes that the euro is going to appreciate in value in relation to the dollar.

The import firm could buy 600,000 euros on the spot market on September 1 for \$300,000 and deposit the euros in an interest-bearing account until the payment date. If the firm does not hedge, and the spot exchange rate rises to \$0.5128 euro on December 1, the importer will suffer a loss of \$7,680, or $(0.5128 - 0.5000) \times 600,000$.

The import firm could also borrow \$300,000 and convert at the spot rate for 600,000 euros. The euros could be lent out, put in certificates of deposit, and so forth, until December 1, when payment is to be made to the exporter. The U.S. dollar loan will be paid from the proceeds of resale etc., without any foreign exchange exposure. This is often referred to as credit hedge.

Example 2: Forward market hedge. On September 1, a U.S. exporter contracts to sell U.S. goods for SF (Swiss francs) 250,000. The goods are to be delivered and payment received on December 1. When the contract is signed, the spot exchange rate is \$0.6098/SF and the December forward rate is \$0.6212/SF. The Swiss franc is expected to depreciate and the December 1 spot exchange rate is likely to fall to \$0.5696/SF.

The U.S. exporter has two options: First, it can sell its franc receivable forward now and receive \$0.6212 per franc on the settlement date (December). Second, it can wait until December and then sell francs on spot. Clearly, the forward market hedge is preferable, and the U.S. exporter would gain: $(0.6212 - 0.6098) \times 250,000 = \$2,850$. The decision to use the forward market is to be made on an assessment of what the future spot rate is likely to be. It is also important to bear in mind the impact of transaction costs before a firm makes a decision on what action to take. A credit hedge could have been feasible if the spot rate in United States had been higher than the forward rate.

Swap

A swap transaction is a simultaneous purchase and sale of a certain amount of foreign currency for two different value dates. The central feature of this transaction is that the bank arranges the swap as a single transaction, usually between two partners. Swaps are used to move out of one currency and into another for a limited period of time without the exchange risk of an open position.

Example. A U.S. firm sells semiconductor chips to Nippon, a Japanese firm, for sixty million yen, and payment was made upon receipt of shipment on October 1. The U.S. firm has payables to Nippon and other Japanese firms of about sixty million yen for the purchase of merchandise, with payment due on January 1. The spot exchange rate on October 1 is 120 yen per dollar and the January sixty-day forward rate is 125 yen per dollar.

The U.S. firm sells its sixty million yen receipts on the spot market for \$500,000 at the price of \$1 = 120 yen. Simultaneously, the firm contracts with the same or different bank to purchase sixty million yen in sixty days at the forward price of 125 yen per dollar. In addition to its normal profits on its exports, the U.S. firm has made a profit of 2.5 million yen from its swap transaction. In cases in which the delivery date to the Japanese firms is not certain, the U.S. firm could use a time option that leaves the delivery date open, while locking the exchange rate at a specified rate.

Other Hedging Techniques

Export/import companies can use different techniques in order to avoid foreign exchange risk:

- *Hedging receipts against payables:* An export firm that has receivables in foreign currency (thirty million British pounds) could hedge its receipts against a payable of thirty million pounds to the same or another firm at about the same time. This is achieved with no additional cost and without going through the foreign exchange market. The same method could be used between export-import firms and their branches or other affiliate companies abroad.
- *Acceleration or delay of payments:* If an importer reasonably believes that its domestic currency is likely to depreciate in terms of the currency of its foreign supplier, it would be motivated to accelerate its payments. This could be achieved by buying the requisite foreign currency before it appreciates in value. However, payments could be delayed if the buyer believes that the foreign currency in which payment is to be made is likely to depreciate in value in terms of the domestic currency.

Guarantees and Insurance Coverage

In certain cases, exporters require a guarantee by the importer, a bank, or another agency against the risk of devaluation or exchange controls. Certain types of insurance coverage are also available against exchange controls. In view of its high cost, hedging is a better alternative than insurance.

Shifting the Risk to the Other Party

Invoicing in One's Own Currency

Risks accompany all transactions involving a future remittance or payment in foreign currency. If the payment or receipt for a transaction is in one's own currency, the risk arising from currency fluctuations is shifted to the other party. Suppose a Korean firm negotiated to make payments (ninety days after the contract date) in its domestic currency (won) for its imports of equipment from a Canadian manufacturer. This shifts the foreign currency risk to the exporter, which will have to convert its won receipts into Canadian dollars. Payment in one's own currency not only shifts the risk of devaluation to the other party but also of the risk of imposition of exchange controls by the importing country against convertibility and repatriation of foreign currency.

Invoicing in Foreign Currency

In the event that the agreement stipulates that payment is to be made in foreign currency, it is important for the exporter to require inclusion of a provision that protects the value of its receipts from currency devaluation. In the previous example, the contract could provide for an increase in payment to compensate the Canadian manufacturer/exporter for losses arising from currency fluctuations.

Another method would be to make certain assumptions about possible adverse changes in the exchange rate and add it to the price. If currency changes are likely to result in a 10 percent loss, the price change could be increased by that percentage (see International Perspective 10.2 for an overview of the Euro).

An export contract could also provide for the establishment of an escrow account in a third country's currency (stable currency) from which payments will be made. This protects the exporter from losses due to depreciation of the importer's currency.

INTERNATIONAL PERSPECTIVE 10.2.

The Euro: A brief overview

What is the euro? The euro is a common currency that replaced all the separate currencies of the individual countries of the European Union (EU). On January 1, 1999, the euro became the legal currency of eleven members of the European Union. In 2002, the euro paper currency and coins became the sole legal tender in the twelve participating members of the European Union.

Participating members: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain. Denmark, Sweden, and the United Kingdom declined to participate at this stage.

The Convergence Criteria: In order to participate in the single European currency, countries were required to meet certain conditions: inflation rates below 2 to 3 percent, public debt to be no more than 60 percent GDP, and the budget deficit to be less than or equal to 3 percent GDP.

Benefits and Costs: (1) For businesses that are involved in cross-border trade, the euro will eliminate the cost of foreign exchange (hedging expenses, etc.) with regard to all intra-European transactions. There will also be no foreign currency risks in relation to cross-border investments within the EU. (2) European businesses will benefit from low inflation and interest rates which is an important policy of the European Central Bank. (3) Besides eliminating exchange rate uncertainty, the euro allows consumers and businesses to compare costs and prices. This, in turn, puts a downward pressure on prices and eliminates the practice of charging different prices in different markets within Europe. (4) Member states will achieve rapid economic and financial integration. It will also lead to greater economic and budgetary discipline and reduced cost of borrowing in international financial markets. (5) Seigniorage from use of the euro as an international currency. The major costs associated with the euro pertain to the inability of members to pursue independent policies to address specific macroeconomic problems. In a fully integrated economy like the United States, such problems are overcome by labor mobility or fiscal redistribution.

Timetable (1998-2002): (1) 1998: Creation of European Central Bank and commencement of production of euro banknotes and coins. (2) 1999-2001: determination of conversion rates for the euro, establishment and execution of the single monetary policy in euros, commencement of foreign exchange operations, and issuance of public debt in euros. Businesses and customers were given the option to choose to use either the euro or national currency. Increased use of euros for bookkeeping transactions. (3) 2002: Changeover of the economy to euro and circulation of euro banknotes and coins. Withdrawal of national currencies.

CHAPTER SUMMARY

Exchange Rates

An exchange rate is the number of units of a given currency that can be purchased for one unit of another currency.

Reasons for the Existence of the Foreign Exchange Market

1. Foreign travel
2. Purchase of foreign stocks and bonds
3. Foreign investment and other receipts and payments in foreign currency
4. Reduction of currency fluctuations
5. Speculation

REVIEW QUESTIONS

1. Differentiate between spot and forward exchange rate. How can a U.S. import firm use the forward market to protect itself from the adverse effect of exchange rate fluctuations?
2. What does it mean when a currency is trading at a discount to the U.S. dollar in the spot market?
3. Why do export-import firms enter the foreign exchange market?
4. Hedging is not always the most appropriate technique to limit foreign exchange risks. Discuss.
5. If a Canadian exporter accepts payments in foreign currency from buyers in the United States, which party bears the currency fluctuation risk? Explain.
6. The euro has now replaced twelve national currencies. What are the implications of this development to companies exporting to the European Union?
7. Suppose that the spot rate of the U.K. pound today is \$2.00 while the six-month forward rate is \$2.05. How can a U.S. importer who has to pay 30,000 U.K. pounds in six months hedge his or her foreign exchange risk?
8. In reference to question 7, what happens if the U.S. importer does not hedge and the spot rate of the pound goes up to \$2.10?

9. Suppose the spot rate of the yen today is \$0.0084 while the three-month forward rate is \$0.0076. (1) How can a U.S. exporter who is to receive 350,000 yen in three months hedge his/her foreign exchange risk? (2) What happens if the exporter does not hedge and the spot rate of the yen in three months is \$0.0078?
10. Do you think the U.S. dollar will continue to maintain its key currency status? Explain.

***CASE 10.1. WILL THE U.S. DOLLAR MAINTAIN
ITS KEY CURRENCY STATUS?***

The global economy has largely depended on the United States, which absorbs about 20 percent of global exports. Many countries lack sufficient domestic demand to sustain economic growth. They consume limited imports and often depend on exports to the U.S. market. For example, exports to the United States accounts for 35 percent of China's GDP and 25 percent of the combined GDP of Canada and Mexico in 2005. In the face of the mounting U.S. trade deficits (over \$800 trillion in 2006), there is likely to be a shift in the mix of global consumption away from the United States. Other developed and rich developing nations will have to boost private consumption and move the world away from excessive dependence on the U.S. market. This also requires addressing structural impediments to import demand in these countries.

The United States has maintained a strong dollar policy because this keeps U.S. inflation low (due to low price of imports) and makes U.S. assets expensive for foreign investors. Countries exchange their exports for dollars which are often invested in U.S. treasuries to shore up the value of their domestic currencies.

Despite rising U.S. trade and budget deficits, the dollar remains the major currency for conducting international trade and investment. For example, 45.2 percent of foreign exchange trading was in dollars compared to 19 percent in euros in 2002. Critical commodities such as oil are denominated in dollars.

A number of factors lead one to believe that the dollar will continue to maintain its key currency status.

- U.S. economic growth has been and will remain significantly stronger than Japan and other major euro-zone countries. Inflation has been tamed due to low cost imports.
- The United States has a large, open credit market, diversified financial institutions, and an independent central bank. Japanese and European

financial institutions lack the breadth and depth of their U.S. counterparts. Many are beginning to recover after scandals.

- Incentives for investments (rates of return, yields) in the United States are higher than in Japan and Europe.

Questions

1. Why does the U.S. government maintain a strong dollar policy?
2. Do you think the euro will replace the U.S. dollar as a key global currency in the coming decade? Discuss.