LOVELY PROFESSIONAL UNIVERSITY

INTERNATIONAL FINANCIAL MANAGEMENT

Edited By

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SYLLABUS

International Financial Management

Objectives:

- Understanding of historical perspectives of international monetary system and theories of exchange rate determination.
- The students will learn the most suitable techniques and strategies to be applied for risk management in the foreign exchange market.
- Analysis and management of country risk involved in investment decisions at multinational levels.

S. No.	Description
1.	Financial Management in Global Context.
2.	***International Monetary System:*** IMF, EMU.
3.	***Currency Forecasting:*** Interest Rate Parity Theory, International Interest Rate Parity Theory, Purchasing Power Parity: Fishers Effect & International Fishers Effect.
4.	***Exchange Rates:*** Determination of Exchange Rates, Foreign Exchange and Eurocurrency Markets.
5.	Role of Economic Fundamentals, Financial and Socio Political Factors; Corporate Exposure Management: Introduction, Foreign Exchange Risk Exposure.
6.	***Management of Transaction Exposure:*** Through Currency Futures, Currency Options, Currency Swaps, Interest Rate Swaps.
7.	Management of Operating Exposure and Management of Translation Exposure.
8.	Foreign Market Entry and Country Risk Management.
9.	Cross-border Capital Budgeting.
10.	Real Options and Cross-border Investment.

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Unit 1: Financial Management in Global Context

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Objectives

After studying this unit, you will be able to:

- Explain the scope of international finance
- Discuss the objectives of multinational companies
- Elaborate the differences in international financial management and domestic financial management
- Describe the international business methods
- Discuss the fields of international business

Introduction

Globalization has made a tremendous impact throughout the world in past few years. The world has seen a tremendous increase in the global transactions and foreign trade in recent years. Multinational companies and Transnational companies hold strong positions in different channels of globalization. They account for all foreign direct investment, are very active in trade, with one third of world trade taking place within and not between companies.

The main reason behind this is that now more and more countries are getting engaged in trading with each other in order to increase their profit or sales or protecting them from being eroded by competition. The main objectives which are influencing the companies to engage in

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international business are expansion of sales, acquiring resources, minimizing competitive risk and diversification of sources of sales and supplies. Besides these there are other few factors like economic factors, cultural factors, technological factors, and social factors which have influence to a greater extent.

The emergence and activities of transnational and multinational enterprises have impacted to a huge extent on the concept of globalization, and multinationals have played an important role. Given their international reach and mobility, prospective countries, and sometimes regions within countries, must compete with each other. To compete, countries and regional political districts offer incentives to MNCs such as tax breaks, pledges of governmental assistance or improved infrastructure, or Lax environmental and labor standards. This process helps to make the MNC more attractive to foreign investment and gives them the required flexibility in marketing and distribution.

When the financial manager of an international corporation operates in more than one country, he encounters new opportunities as well as new costs and risks. The main risk facing MNC is the differences among the countries, the people of the world, foreign exchange risks and the special business risks of operating in unfamiliar environments. In addition, there is the spectre of political risk-the risk that sovereign governments may interfere with operations or terminate them altogether.

1.1 Scope of International Finance

MNCs typically have subsidiaries or joint-ventures in each national market. How these companies are organized, how they operate, and their lines of business are heavily influenced by socio-cultural, political, global, economic and legal environments of each country a firm does business in. The management of the parent company typically must incorporate all the legal restrictions of the home company into the management of companies in based in very different legal and cultural frameworks. International treaties, such as the Basel Accords, the World Trade Organization, and the Kyoto Protocol often seek to provide a uniform framework for how business should be influenced between signatory states.

International business by its nature is a primary determinant of international trade. One of the results on the increasing success of international business ventures is globalization. Trade helps to prevent conflict. International business essentially is about trade, and when people trade they are in contact with one another. As a result, there is less isolation and when countries begin to interact through trade, they are less likely to fight. This is also linked to the theory that democratic states are less likely to go to war with one another because they are interconnected and dependent on each others success.

As a Multinational Corporation (MNC) is involved in producing and selling goods and services in more than one country, it usually consists of a parent company located in its home country with numerous foreign subsidiaries. As business expands, the awareness of opportunities in foreign markets also increases. This, ultimately, evolves into some of them becoming MNCs so that they can enjoy the benefits of international business opportunities.

Notes A knowledge of International Finance is crucial for MNCs in two important ways. First, it helps the companies and financial managers to decide how international events will affect the firm and what steps can be taken to gain from positive developments and insulate from harmful ones. Second, it helps the companies to recognise how the firm will be affected by movements in exchange rates, interest rates, inflation rates and asset values.

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The consequences of events affecting the stock markets and interest rates of one country immediately show up around the world. This is due to the integrated and interdependent financial environment which exists around the world. Also, their have been close links between money and capital markets. All this makes it necessary for every MNC and aspiring manager to take a close look at the ever changing and dynamic field of International Finance.

1.1.1 Global Links

Globalisation increases the ability of firms to do business across national boundaries. The barriers to crossing those boundaries are coming down gradually. What once took days now takes hours and what once took hours now takes minutes, or even seconds. All this is opening new opportunities for everyone everywhere; but Globalisation is not really risk-free.

Globalisation is a phenomenon that no development agenda can afford to ignore. National governments generally face frustrations in dealing with globalisation and these frustrations are magnified for small developing countries. But such countries stand to gain more from international trade and finance than their large counterparts since they face tighter resource and market size constraints.

Global Links and World Economic Situation and Prospects

The world economy is mired in the severest financial crisis since the Great Depression. Growth in World Gross Product (WGP) is expected to slow to 1.0 per cent in 2009, a sharp deceleration from the rate of 2.5 per cent estimated for 2008 and well below the more robust pace in previous years. While most developed economies are expected to be in a deep recession, a vast majority of developing countries is experiencing a sharp reversal in the robust growth registered in the period of 2002–2007, indicating a significant setback in the progress made in poverty reduction for many developing countries over the past few years. The prospects for the Least Developed Countries (LDCs), which did so well on average over the past years, are also deteriorating rapidly. Income per capita for the world as whole is expected to decline in 2009.

World growth is projected to fall to half percent in 2009, its lowest rate since World War II. Despite wide-ranging policy actions, financial strains remain acute, pulling down the real economy. A sustained economic recovery will not be possible until the financial sector's functionality is restored and credit markets are unclogged. For this purpose, new policy initiatives are needed to produce credible loan loss recognition; sort financial companies according to their medium-run viability; and provide public support to viable institutions by injecting capital and carving out bad assets. Monetary and fiscal policies need to become even more supportive of aggregate demand and sustain this stance over the foreseeable future, while developing strategies to ensure long-term fiscal sustainability. Moreover, international cooperation will be critical in designing and implementing these policies.

Self Assessment

State whether the following statements are true or false:

1. International business by its nature is a primary determinant of international trade.
2. A knowledge of International Finance is not crucial for MNCs as it does not helps the companies and financial managers to decide how international events will affect the firm.
3. Globalisation decreases the ability of firms to do business across national boundaries.

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1.2 Objective of the MNCs

An objective is necessary so that all decisions of the organisation contribute towards the fulfillment of this purpose. The usually accepted objective of an MNC is to maximise shareholders wealth. This is the objective which a domestic firm also accepts and tries to fulfil. In the context of a MNC, the objective of maximising shareholders' wealth must be analysed in a much wider context, with a much wider range of opportunities, taking into account the worldwide market share. This makes the MNCs task much more complex than that of the domestic firms.

If the managers of MNCs are to achieve their objective of maximising the value of their firms or the rate of return from foreign operations, they have to understand the environment in which they function. The environment consists of:

1. The international financial system which consists of two segments: the official part represented by the accepted code of behaviour by governments comprising the International Monetary System and the private part which consists of international banks and other multinational financial institutions that participate in the international money and capital markets.
2. The foreign exchange market which consists of international banking, foreign exchange dealers and 24 hour trading at organised exchanges around the world where currency future options and derivatives are regularly traded.
3. The host country's environment which consists of such aspects as the political and socio-economic systems and people's cultural values and aspirations. Understanding of the host country's environment is crucial for successful operation and assessment of the political risk.

Further, the manager of a MNC must take into account the fact that the presence of his firm in a number of countries presents challenges as well as opportunities. The basic challenges are the multiplicity of currency and the associated unique risks a manager of a MNC has to face. Another important challenge is the multiplicity and complexity of the taxation system which has an impact on the MNC's operations and profitability. But the manager can use the taxation tool to reduce the firm's overall tax burden through transfer of funds from high to low tax affiliates and by using tax havens.

In addition, due to the multiplicity of sources of funds, the finance manager has to worry about the foreign exchange and political risk in positioning funds and in modifying cash resources. The MNC can reduce its cost of capital and, at the same time, maximise the return on its excess cash resources by taking advantage of the fact that financial resources have been raised from different capital markets.

Did u know?

- A well diversified MNC can actually reduce risks and fluctuations in earnings and cash flows by making the diversity in geography and currency work in its favour.
- A successful manager of an MNC will take into account the various challenges of operating his firm in a number of countries so that he can make the diversity and complexity of the environment work for the total benefit of the firm.

1.2.1 Agency Problem

Financial executives in multinational corporations many times have to make decisions that conflict with the objective of maximising shareholders wealth. It has been observed that as

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foreign operations of a firm expand and diversify, managers of these foreign operations become more concerned with their respective subsidiary and are tempted to make decisions that maximise the value of their respective subsidiaries. These managers tend to operate independently of the MNC parent and view their subsidiary as single, separate units. The decisions that these managers take will not necessarily coincide with the overall objectives of the parent MNC. There is less concern, here, for how the entity can contribute to the overall value of the parent MNC. Thus when a conflict of goals occurs between the managers and shareholders, it is referred to as the 'Agency Problem'.

MNCs use various strategies to prevent this conflict from occurring. One simple solution here is to reward the financial managers according to their contribution to the MNC as a whole on a regular basis. Still another alternative may be to fire managers who do not take into account the goal of the parent company or probably give them less compensation/rewards. The ultimate aim here is to motivate the financial managers to maximize the value of the overall MNC rather than the value of their respective subsidiaries.

1.2.2 Objectives of the Firm and Risk Management

Most companies have certain goals such as profit maximization, increasing market share, or cost reduction. These goals help the company in the short term, but the ultimate goal of a company should be taking care of the interests of the stockholders. In this section, you will first learn about profit maximization as an objective and why this may not be an acceptable goal for a company. Because the accepted objective of a company is the maximization of shareholders' wealth, you need to learn about this objective, as well as how to evaluate the objective and its impact on the shareholders, management, and society.

Profit Maximization

Companies whose goal is profit maximization make decisions that maximize the overall profits. Profit maximization is not regarded as an appropriate objective for several reasons. In the short run, a finance manager can easily maximize profits by deferring maintenance, eliminating research and development expenditures, or cutting other vital costs. These and other short-run cost-cutting measures can result in increased profits, but are clearly not desirable for the long-run interests of a company. The objective of profit maximization is not very specific with respect to the time frame over which to measure profits.

There are three important reasons why profit maximization cannot be an acceptable goal. First, profit maximization ignores the timing of the cash flows, and the reference to the current year's profits or the profits for future years is unknown. The timing and uncertainty associated with the cash flows should be considered.

Second, the risk associated with the various projects is not taken into account. At any particular point in time, finance managers face various projects with various levels of risk. Failure to consider the risk levels of the separate projects in decision-making can lead to incorrect decisions. If a company tries to maximize only the average of future profits, it can end up with the wrong set of projects because projects with maximum expected cash flows can possess a high risk.

Another drawback of profit maximization is that it is based on book values and not on cash flows. When evaluating projects, finance managers are more concerned with cash flows than accounting profits because companies need cash for various activities, such as paying dividends, salaries, and wages.

Maximization of Shareholders' Wealth

The goal of a company should be the maximization of shareholders' wealth or the maximization of the market value of the existing shareholders' common stock. Any investment, financing,

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dividend, or working capital management decision that increases the company value is a good financial-management decision. The finance manager strives to act in the best interests of the shareholders by making decisions that increase the value of the stock. It is assumed that financial markets are efficient and stock prices truly reflect shareholders' wealth and that shareholders' wealth is not increased at the expense of bondholders.

The goal of maximization of shareholders' wealth involves maximizing the NPV or wealth of an investment decision to the shareholders. The NPV of a project is the sum of the present value of all the cash flows that are expected to occur during the life of the project. The NPV can be explicitly defined as:

$$W = \frac{A1}{(1+k)} + \frac{A2}{(1+k)} + \frac{A3}{(1+k)} + \frac{An}{(1+k)} - IO$$

Where:

W = NPV of a project

IO = Initial investment or cost of the project

A1, A2 = Cash flows expected to occur every year if the project is adopted

k = Discount rate used by the project for finding the present value of the cash flows

Shareholder-wealth maximization is considered to be a more appropriate objective than profit maximization because it considers the net benefits after taking into account the compensation for time and risk. The decision rule associated with NPV is that if a project has a positive NPV, it creates wealth for its shareholders and should be accepted. If the NPV is negative, the project should be rejected because it will reduce shareholders' wealth. If there are several projects, the finance manager should select the projects with the highest NPV. If this criterion is adopted, the wealth of the shareholders will be maximized.

Stakeholders' Consideration

Companies have broadened their focus, and, in addition to the interests of the shareholders, they focus on the interest of the stakeholders. The term 'stakeholder' is a broad term and refers to the parties who have a direct interest in the company, such as customers, owners, creditors, suppliers, and employees. If the company follows a strategic vision and a goal such as maximizing the market value of the share, the stakeholders will be amply rewarded.

Management's Consideration

From the viewpoint of management, the shareholders' wealth maximization is not always a practical governing objective.

Example: If the market conditions are temporarily adverse, management can decide to adopt maximization of sales as the objective.

This objective need not be in harmony with shareholders' wealth maximization and can lead to a conflict. Management discipline can be hard to maintain if directors and shareholders are disinterested in running the company. The management can also manipulate information to increase the share prices.

Societal Consideration

Stock prices respond positively to the actions of management that enhance the value of the company and improve the ability of a company to be successful in the long run. This means that

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management's actions to maximize stock price tend to provide long-term benefits to shareholders, employees, and consumers. These actions of management that maximize stock price also tend to benefit society by allocating the resources in the best possible manner.

Example: If a company is able to produce high-quality goods and services at the lowest possible cost, society also tends to benefit because its resources are optimally utilized.

Self Assessment

State whether the following statements are true or false:

4. Stock prices respond positively to the actions of management that enhance the value of the company and improve the ability of a company to be successful in the long run.
5. profit maximization is considered to be a more appropriate objective than Shareholder-wealth maximization because it considers the net benefits after taking into account the compensation for time and risk.
6. The goal of maximization of shareholders' wealth involves minimizing the NPV or wealth of an investment decision to the shareholders.
7. A well diversified MNC can actually reduce risks and fluctuations in earnings and cash flows by making the diversity in geography and currency work in its favour.

Caselet

Emergence of MNCs

Corporations invest abroad for a variety of reasons. Among them are to open new markets or to hold onto existing ones; to avoid tariffs or other trade restrictions; to tap new sources of raw materials and agricultural production; and to take advantage of cheap foreign labour. Although the history of American MNCs goes back to at least the mid-19th century and a significant number of MNCs had been established by the turn of the 20th century, their emergence as a key factor in international commerce is really a product of the post-World War II period.

Source: *International Financial Management*, Madhu Vij, Excel Books.

1.3 International Financial Management and Domestic Financial Management

International Finance is a distinct field of study and certain features set it apart from domestic financial management, MNC has got operations around the world and thus have to deal with international, customers, shareholders and other suppliers. Financial Management for an MNC is much more complex, as they have to deal with exchange rate fluctuations, foreign currency, dual taxation, uncertain political and economic environment and a host of other uncertainties and risks. The important distinguishing features of international finance are discussed below:

1. ***Foreign exchange risk:*** An understanding of foreign exchange risk is essential for managers and investors in the modern day environment of unforeseen changes in foreign exchange rates. In a domestic economy this risk is generally ignored because a single national currency serves as the main medium of exchange within a country. When different national currencies are exchanged for each other, there is a definite risk of volatility in foreign

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exchange rates. The present International Monetary System set up is characterised by a mix of floating and managed exchange rate policies adopted by each nation keeping in view its interests. In fact, this variability of exchange rates is widely regarded as the most serious international financial problem facing corporate managers and policy makers.

At present, the exchange rates among some major currencies such as the US dollar, British pound, Japanese yen and the euro fluctuate in a totally unpredictable manner. Exchange rates have fluctuated since the 1970s after the fixed exchange rates were abandoned. Exchange rate variation affect the profitability of firms and all firms must understand foreign exchange risks in order to anticipate increased competition from imports or to value increased opportunities for exports.

2. ***Political risk:*** Another risk that firms may encounter in international finance is political risk. Political risk ranges from the risk of loss (or gain) from unforeseen government actions or other events of a political character such as acts of terrorism to outright expropriation of assets held by foreigners. MNCs must assess the political risk not only in countries where it is currently doing business but also where it expects to establish subsidiaries. The extreme form of political risk is when the sovereign country changes the "rules of the game" and the affected parties have no alternatives open to them.

Example: In 1992, Enron Development Corporation, a subsidiary of a Houston based energy company, signed a contract to build India's longest power plant. Unfortunately, the project got cancelled in 1995 by the politicians in Maharashtra who argued that India did not require the power plant. The company had spent nearly $300 million on the project. The Enron episode highlights the problems involved in enforcing contracts in foreign countries. Thus, political risk associated with international operations is generally greater than that associated with domestic operations and is generally more complicated.

3. ***Expanded opportunity sets:*** When firms go global, they also tend to benefit from expanded opportunities which are available now. They can raise funds in capital markets where cost of capital is the lowest. In addition, firms can also gain from greater economies of scale when they operate on a global basis.

4. ***Market imperfections:*** The final feature of international finance that distinguishes it from domestic finance is that world markets today are highly imperfect. There are profound differences among nations' laws, tax systems, business practices and general cultural environments. Imperfections in the world financial markets tend to restrict the extent to which investors can diversify their portfolio. Though there are risks and costs in coping with these market imperfections, they also offer managers of international firms abundant opportunities.

Thus, the job of the manager of a MNC is both challenging and risky. The key to such management is to make the diversity and complexity of the environment work for the benefit of the firm.

1.3.1 International Business Activities

The volume of international business has exploded in recent years. Globalisation is the new buzzword in industry circles today and is making economies to be more open and adaptable to foreign investment. The inflow of foreign investment is very important for the economic development of a country. The inflows from foreign investment can be divided into two categories:

1. Foreign Direct Investments (FDI) are investments made for the purpose of actively controlling property assets or companies located in host countries.

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2. Foreign Portfolio Investments are purchases of foreign financial assets for a purpose other than control.

FDI is one of the most important sources of capital market and links the host economy with the global markets and fosters economic growth. The potential of FDI is determined by seven factors – access to resource, low production costs, access to export markets, cultural cum-geographic proximity, competitor presence and a host of government incentives.

The economic benefits of FDI are many from a global perspective. FDI is an important means of promoting and encouraging capital to flow where it is most valuable, FDI facilitates the production of goods and services in locations that have a comparative advantage for such production.

FDI is also imperative to economic development of a country. It generates increased employment opportunities and also enhances labour productivity which in turn leads to higher wage rates, lower inflation rates and an improved overall productivity. In fact, attracting foreign capital is one way a national government can improve the living standards of its people.

In addition, FDI also brings with it new technology and management techniques that pave the way to judiciously utilise the resource and improve the efficiency of the national economy. It also helps in raising the level of competition in the national economy to the benefit of consumers, providing new or improved quality products at lower prices thereby increasing productivity.

In recognition of the important role of Foreign Direct Investment (FDI) in the accelerated economic growth of the country, Government of India initiated a slew of economic and financial reforms in 1991.

India has now ushered in the second generation reforms aimed at further and faster integration of Indian economy with the global economy. As a result of the various policy initiatives taken, India has been rapidly changing from a restrictive regime to a liberal one, and FDI is encouraged in almost all the economic activities under the automatic route.

Did u know? Over the years, FDI inflow in the country is increasing. However, India has tremendous potential for absorbing greater flow of FDI in the coming years. Serious efforts are being made to attract greater inflow of FDI in the country by taking several actions both on policy and implementation front.

Foreign Direct Investment in India is permitted under the following forms of investments through:

- Financial collaborations.
- Joint ventures and technical collaborations.
- Capital markets via Euro issues.
- Private placements or preferential allotments.

FDI is not permitted in the following industrial sectors:

- Arms and ammunition.
- Atomic Energy.
- Railway Transport.
- Coal and lignite.
- Mining of iron, manganese, chrome, gypsum, sulphur, gold, diamonds, copper, zinc.

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Self Assessment

Fill in the blanks:

8. ..... are investments made for the purpose of actively controlling property assets or companies located in host countries.

9. FDI facilitates the production of goods and services in locations that have a ..... advantage for such production.

10. An understanding of foreign exchange ..... is essential for managers and investors in the modern day environment of unforeseen changes in foreign exchange rates.

1.4 International Business Methods

The rapid growth of international business in the last two decades has been a challenge for the managers. Managers of multinational enterprises have to establish their presence in foreign locations by entering into some form of contract with an independent enterprise, by creating or acquiring a local enterprise, or by various hybrid combinations. There are various forms of organisation, but keeping in view the generally accepted format, five methods by which firms conduct international business activity can be identified. These are Licensing, Franchising, Joint Ventures, Management Contracts and Establishing New Foreign Subsidiaries. These five methods are described as follows:

- ***Licensing:*** A firm in one country licenses the use of some or all of its intellectual property (patents, trademarks, copyrights, brand names) to a firm of some other country in exchange for fees or some royalty payment. Licensing enables a firm to use its technology in foreign markets without a substantial investment in foreign countries.
- ***Franchising:*** A firm in one country authorising a firm in another country to utilise its brand names, logos etc. in return for royalty payment.
- ***Joint Ventures:*** A corporate entity or partnership that is jointly owned and operated by two or more firms is known as a joint venture. Joint ventures allow two firms to apply their respective comparative advantage in a given project.
- ***Establishing New Foreign Subsidiaries:*** A firm can also penetrate foreign markets by establishing new operations in foreign countries to produce and sell their products. The advantage here is that the working and operation of the firm can be tailored exactly to the firms needs. However, a large amount of investment is required in this method.
- ***Management Contracts:*** A firms in one country agrees to operate facilities or provide other management services to a firm in another country for an agreed upon fee.

The above mentioned methods which help multinational enterprises establish their presence in foreign locations must attempt to answer two basic question:

- Will the expected benefits to be derived from any of these arrangement exceed its costs?
- If yes, which arrangement will provide the largest net benefit?

The most frequently used method to compare the net benefits from any given arrangement is to compare a stream of future costs with a stream of future benefits by discounting them to their present value. The adjustment associated with the risk and uncertainty of the projection should also be taken into account here.

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In practice, however, the corporate analyst will realise the problems associated with calculating some costs and benefits due to some hard to quantify factors that may affect the decision. The relative merits of the different arrangements depends on the answer to two questions:

- What is the size of the difference when one arrangement outweighs another in some element of cost or benefit.
- If one arrangement is ranked high in one area and low in another, can some common measure be applied so that a final decision can be reached by the manager.

The challenge for multinational managers is to find that form of international business activity that is most consistent with his or her strategy. For example, licensing arrangements generally involve less political risk than ownership arrangements. Also the stability associated with expected income flows is generally higher for licensing arrangements as they are fixed in amount or are a function of production volumes. However, in terms of flexibility, the licensing agreement generally imposes a heavier cost on the foreign licensor than do most ownership arrangements. For instance, the foreign licensor may be irrevocably tied during the life of the license to use the licensee as its instrumentality for serving some given market. In some cases of licensing there is often a risk that the licensee will breach some of the provisions of the agreement, such as provisions that impose geographical limitation on sales that require quality control or that require the licensee to purchase intermediate products from the licensor.

Firms having long overseas experience are generally found to prefer wholly owned subsidiaries than joint ventures and any kind of subsidiary over a license. This is so because firms with overseas experience have ready access to the information skills and capital needed to launch a foreign subsidiary. Also, in cases where control is a important and significant factor in decision making, a wholly owned subsidiary may be preferred.

Caution From the viewpoint of the multinational firm, the optimum ownership arrangement may vary over time and also from one foreign affiliate to the other. In some cases, the choice is likely to be determined by the kind of resources already available with the firm and the kind of strategy the firm is pursuing.

Self Assessment

State whether the following statements are true or false:

11. In Licensing firm in one country authorising a firm in another country to utilise its brand names, logos etc. in return for royalty payment.
12. Licensing arrangements generally involve more political risk than ownership arrangements.
13. Firms having long overseas experience are generally found to prefer wholly owned subsidiaries than joint ventures and any kind of subsidiary over a license.

Task Collect a few recent annual reports of MNCs of your choice. Can you comment on the impact of the MNCs foreign business and how the MNC has benefited from its international operations? You could also perform the above analysis industry-wise.

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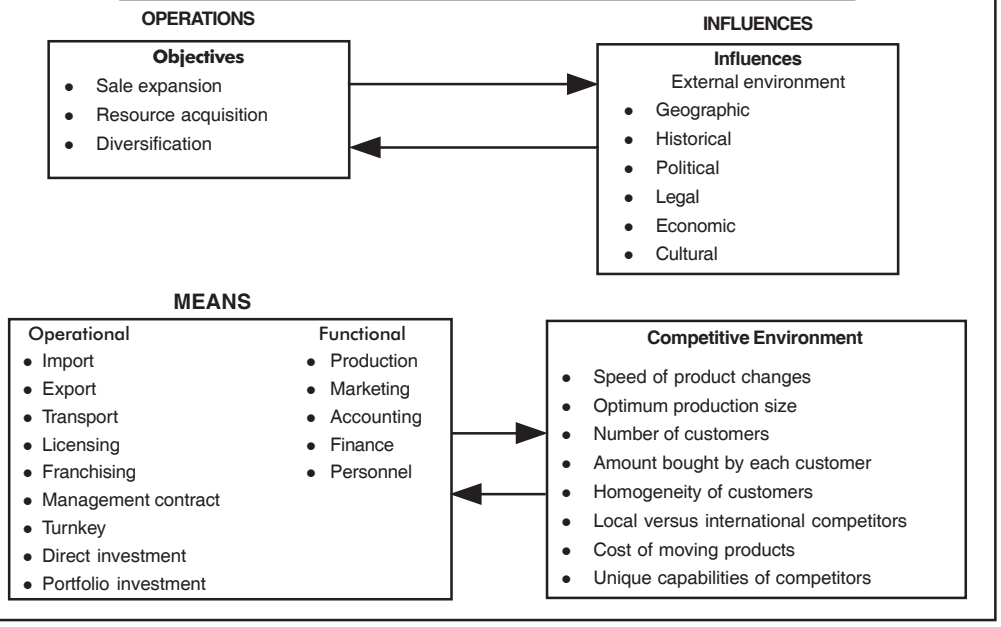
1.5 Field of International Business

Several developments have encouraged Globalisation of world trade through international business. Global integration of goods and services improves the overall efficiency of resources and also tends to increase competition forcing firms to be more efficient.

Another significant reason for Globalisation of business is the increasing standardisation of products and services across countries. This helps firms to sell their products across countries. To pursue any of its international objectives, a company must establish international operations that may be different from those used domestically. Another important aspect to be taken into account is the environment in which the firm has to operate. The environmental conditions also affect the means of carrying out business functions such as finance, marketing, production, etc.

Figure 1.1: Operations and Influences of International Business



Source: *International Business Environments and Operations* by John D Daniels and Lee H Radebaugh, Sixth Edition, p. 8, Adison Wesley Publishing Company.

1.5.1 Motivation for International Business

There are three primary motivations for firms to pursue international business – to expand sales, to acquire resources and to diversify sources of sales and supplies. So the growth potential becomes much greater for companies that seek out foreign markets.

Figure 1.2 illustrates the cost-benefit evaluation for purely domestic firms versus MNCs. The marginal return on projects for both the MNC and purely domestic firm are shown with the help of horizontal steps. Each horizontal step represents a specific project. The horizontal steps differ in length since project sizes differ. It is also assumed that these projects are independent of each other and their expected returns have been adjusted for the risk factor. The marginal return on projects for the MNC is above that of the purely domestic firm because of the expanded opportunity set of projects available to the MNC.

The marginal cost of capital curves for the MNC and purely domestic firm are also shown in the diagram. The cost of capital shows an increasing trend with asset size for both the MNC and domestic firm. This is based on the assumption that as the firm grows, the creditors and

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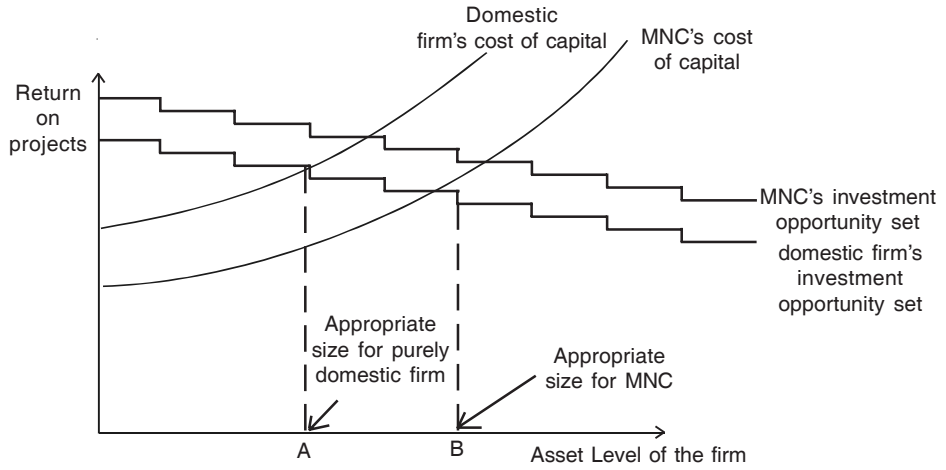
shareholders demand a higher return for the increased risk they are now exposed to. Once again the MNC is assumed to have an advantage in obtaining funds at a lower cost than the purely domestic firms. This is due to the larger opportunities and resources available to it.

As shown in the diagram, the firm continues to accept projects as long as the marginal cost of financing the projects is greater than the marginal returns on projects. A purely domestic firm accepts projects up to point A while the MNC continues to accept projects up to point B. The MNC accepts projects up to a higher level due to the cost advantages and opportunities in foreign countries. In both the cases, the firm accept projects as long as the expected benefits from additional projects exceeds the marginal cost of the projects. This comparison helps us to understand why firms expand internationally. However, the analysis may change in cases where no feasible foreign opportunities for firms are available or when foreign projects are riskier than domestic firms resulting in a higher cost of capital.

Figure 1.2: Cost-benefit Evaluation for Domestic Firms vs MNCs



Self Assessment

Fill in the blanks:

14. There are three primary motivations for firms to pursue international business – to expand sales, to acquire resources and to diversify …… of sales and supplies.

15. Global integration of goods and services improves the overall …… of resources and also tends to increase competition forcing firms to be more efficient.

Case Study

Financial Crisis

The current financial crisis is first and foremost a crisis of confidence. The tip of the iceberg may be the subprime mortgage crisis and its immediate aftermath, but the roots of the crisis have to do with unsustainable dual deficits (fiscal and trade) that have resulted in gargantuan levels of U.S. debt, both private and public. The current financial crisis happened as things were sold to people who could have never paid it back. It started with sub-prime crisis, where the greed led to a great divide. One side was greedy group of people, companies and countries that wanted to make more profit than possible.

Contd...

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It started with genuine home loans and later as good credit people diminished, they lended money to the people who could not pay back the first instalment of EMI. So, when return of investments did not come back, it stopped the entire cash flow cycle. This core issue impacted the international market.

Questions

1. Comment on the current financial crisis and the role of central banks in this regard.
2. The International Monetary Fund has said the global recession will be deeper and the recovery slower than previously thought as financial markets take longer to stabilize. The key factor determining the course of the downturn and recovery will be the rate of progress toward returning the financial sector to health. Comment in the context of the cause of the crisis.
3. Briefly discuss the role of academics in the current financial crisis. (Hint- Academics, often more than most others, are susceptible to inventing 'fashions' in their respective disciplines to extend their own relevance. The motive may or may not be financial.)

Source: *International Financial Management*, Madhu Vij, Excel Books.

1.6 Summary

- Knowledge of international finance is very crucial for MNCs as it helps the companies and financial managers to decide how international events will affect the firm and the steps companies can take to be insulated from adverse movements in exchange rates, interest rates and inflation rates.
- An understanding of international finance has become important as the world has entered an era of unprecedented global economic activity with worldwide production and distribution.
- The distinguishing features in international finance which need special focus are – foreign exchange risk, political risk, expanded opportunity sets and market imperfections.
- The important aspect here is that MNCs that compete in the global market place must not only be managed in such a way that they can withstand the effects of crisis in foreign countries, but must also have the flexibility to capitalise on these crisis.
- There are five methods by which firms conduct international business activity – licensing, franchising, joint ventures, management contracts and establishing new foreign subsidiaries.
- The challenge for multinational managers is to find that form of international business activity that is most consistent with his or her strategy.
- The agency problem reflects a conflict of interest between decision making managers and the owners of the MNC. Agency costs occur in an effort to ensure that managers act in the best interests of the owners.
- Generally, the agency costs are normally larger for MNCs than for purely domestic firms.

1.7 Keywords

Agency Problem: Agency problem reflects a conflict of interest between decision making managers and the owners of the MNC.

Foreign Direct Investments (FDI): Foreign direct investments are investments made for the purpose of actively controlling property assets or companies located in host countries.

Notes

Franchising: Franchising means, a firm in one country authorizing a firm in another country to utilise its brand names, logos etc. for some royalty payment.

Globalisation: Globalisation increases the ability of firms to do business across national boundaries.

Joint Venture: Joint venture means a corporate entity or partnership that is jointly owned and operated by two or more firms.

Licensing: The granting of permission to use intellectual property rights, such as trademarks, patents, or technology, under defined conditions.

Management Contracts: A firms in one country agrees to operate facilities or provide other management services to a firm in another country for an agreed upon fee.

Political Risk: Political risk ranges from the risk of loss (or gain) from unforeseen government actions or other events of a political character such as acts of terrorism to outright expropriation of assets held by foreigners.

1.8 Review Questions

1. What factors cause some firms to become more internationalised than others?
2. Describe the constraints that interfere with the MNC's objective.
3. Briefly describe the motivations for International Business.
4. "Because of its broad global environment, a number of disciplines (geography, history, political science, etc.) are useful to help explain the conduct of International Business." Elucidate with examples.
5. "The conflict between the MNCs and their environment is real and frequently very intense." Discuss.
6. Discuss the distinguishing features of international finance.
7. Explain the possible reasons for growth in international business.
8. "Globalization has made a tremendous impact throughout the world in past few years. There are various reasons involved in this progression.' Elaborate and discuss the reasons.
9. Do you think MNCs have greater flexibility than domestic firms in the location and timing of their investments? Elucidate.
10. 'The job of a manager of a MNC is both challenging and risky.' Comment.

Answers: Self Assessment

1.	True	2.	False
3.	False	4.	True
5.	False	6.	False
7.	True	8.	Foreign Direct Investments (FDI)
9.	Comparative	10.	Risk
11.	False	12.	False
13.	True	14.	Sources
15.	Efficiency		

Notes

1.9 Further Readings

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Unit 2: International Monetary System

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Objectives

After studying this unit, you will be able to:

- Explain the evolution of International monetary system
- Discuss the classifications of currency arrangements
- Explain the European monetary system

Introduction

This unit examines the International Monetary System and helps the student to understand how the choice of system affects currency values. The unit discusses the first three phases of the IMS – The International Gold Standard, The Inter-war Period and the Bretton Woods System, in brief. It then discusses, in detail, the current International Monetary System. Finally, the classification of currency arrangements and the European Monetary system are discussed.

The International Monetary System, as we have today, has evolved over the course of centuries and defines the overall financial environment in which multinational corporations operate. The International Monetary System consists of elements such as laws, rules, agreements, institutions, mechanisms and procedures which affect foreign exchange rates, balance of payments adjustments, international trade and capital flows. This system will continue to evolve in the future as the international business and political environment of the world economy continues to change.

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The International Monetary System plays a crucial role in the financial management of a multinational business and economic and financial policies of each country.

2.1 Evolution of the International Monetary System

Evolution of the International Monetary System can be analysed in four stages as follows:

1. The Gold standard, 1876–1913
2. The Inter-war Years, 1914–1944
3. The Bretton Woods System, 1945–1973
4. Flexible Exchange Rate Regime since 1973

2.1.1 The Gold Standard, 1876–1913

In the early days, gold was used as storage of wealth and as a medium of exchange. The gold standard, as an International Monetary System, gained acceptance in Western Europe in the 1870s and existed as a historical reality during the period 1875–1914. The majority of countries got off gold in 1914 when World War I broke out. The classical gold standard thus lasted for approximately 40 years. The centre of the international financial system during this period was London reflecting its important position in international business and trade.

The fundamental principle of the classical gold standard was that each country should set a par value for its currency in terms of gold and then try to maintain this value. Thus, each country had to establish the rate at which its currency could be converted to the weight of gold. Also, under the gold standard, the exchange rate between any two currencies was determined by their gold content.

Thus, the three important features of the gold standard were, First, the government of each country defines its national monetary unit in terms of gold. Second, free import or export of gold and third, two-way convertibility between gold and national currencies at a stable ratio. The above three conditions were met during the period 1875 to 1914.

The United States, for example, declared the dollar to be convertible to gold at a rate of $20.67/ ounce of old. The British pound was pegged at £ 4.2474/ounce of gold. Thus, the dollar-pound exchange rate would be determined as follows:

$$\frac{\$20.67/\text{ounce of gold}}{£4.2474/\text{ounce of gold}} = \$4.86656/£2$$

Each country's government then agreed to buy or sell gold at its own fixed parity rate on demand. This helped to preserve the value of each individual currency in terms of gold and hence, the fixed parities between currencies. Under this system, it was extremely important for a country to back its currency value by maintaining adequate reserves of gold.

Consider, by way of example, the US dollar in relation to the British pound and assume that the par value of the pound as defined by the dollar when the gold standard was in effect was $4.86. If the cost of moving gold between the two countries was 2 cents per British pound, the fluctuation limit would then be 2 cents either above or below that par value. That is, the value of the pound sterling could move either up to $4.88 or down to $4.84. The upper limit was known as the 'gold export point'. The pound could not rise above the gold export point because the rate would then be greater than the actual cost of shipping gold. If the value of the gold export point was greater, a US importer would find it more economical simply to buy gold with dollars and ship the gold as a payment to the British creditor instead of paying a higher price unnecessarily to buy

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pounds. It would be reasonable for the US importer to pay $4.88 for each British pound but no higher than that.

By the same token, the pound could not fall below $4.84 – the lower limit known as the 'gold import point'. If the pound fell below $4.84, a British importer would be better off converting pounds into gold for payment. The cost of shipping gold would be less than the high cost of buying dollars for payment. In doing so, the importer would export gold and the United States would gain more gold for its reserves. In actual practice, governments always stood ready to buy and sell gold to make certain that the exchange rate would not move outside of the established limits.

Price-Specie-Flow Mechanism

The gold standard functioned to maintain equilibrium through the so-called 'price-specie-flow mechanism' (or more appropriately the specie-flow-price mechanism), with *specie* meaning gold. The mechanism was intended to restore equilibrium automatically. When a country's currency inflated too fast, the currency lost competitiveness in the world market. The deteriorating trade balance due to imports being greater than exports led to a decline in the confidence of the currency. As the exchange rate approached the gold export point, gold was withdrawn from reserves and shipped abroad to pay for imports. With less gold at home, the country was forced to reduce its money supply, a reduction accompanied by a slowdown in economic activity, high interest rates, recession, reduced national income and increased unemployment.

The price-specie-flow mechanism also restored order in case of trade surpluses by working in the opposite manner. As the country's exports exceeded its imports, the demand for its currency pushed the value toward the gold import point. By gaining gold, the country increased its gold reserves, enabling the country to expand its money supply. The increase in money supply forced interest rates to go lower, while heating up the economy. More employment, increased income and subsequently, increased inflation followed. Inflation increased consumers' real income by overvaluing the currency, making it easier to pay for imports. It should be remembered that an inflated country with the exchange rate held constant is an advantageous place to sell products and a poor place to buy. With inflation, prices of domestic products would rise and become too expensive for overseas buyers. At the same time, foreign products would become more competitive and the balance of payments would become worse. Next would come a loss of gold and the need to deflate and the cycle would be repeated.

Decline of the Gold Standard

There are several reasons why the gold standard could not function well over the long run. One problem involved the price-specie-flow mechanism. For this mechanism to function effectively, certain "rules of the game" that govern the operation of an idealised international gold standard must be adhered to. One rule is that the currencies must be valued in terms of gold. Another rule is that the flow of gold between countries cannot be restricted. The last rule requires the issuance of notes in some fixed relationship to a country's gold holdings. Such rules, however, require the nations' willingness to place balance of payments and foreign exchange considerations above domestic policy goals and this assumption is, at best, unrealistic. Thus, the operation of the gold standard was not as automatic or mechanical as the price-specie-flow mechanism might lead one to believe.

Because gold is a scarce commodity, gold volume could not grow fast enough to allow adequate amounts of money to be created (printed) to finance the growth of world trade. The problem was further aggravated by gold being taken out of reserve for art and industrial consumption, not to mention the desire of many people to own gold. The banning of gold hoarding and public

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exporting of gold bullion by President Franklin Roosevelt was not sufficient to remedy the problem.

Another problem of the system was the unrealistic expectation that countries would subordinate their national economies to the dictates of gold as well as to external and monetary conditions. In other words, a country with high inflation and/or trade deficit was required to reduce its money supply and consumption, resulting in recession and unemployment. This was a strict discipline that many nations could not force upon themselves or their population. Instead of having sufficient courage to use unemployment to discourage imports, importing countries simply insisted on intervention through tariffs and devaluations, instead. Nations insisted on their rights to intervene and devalue domestic currencies in order to meet nationwide employment objectives.

Did u know? Because of the rigidity of the system, it was a matter of time before major countries decided to abandon the gold standard, starting with the United Kingdom in 1931 in the midst of a worldwide recession. With a 12 per cent unemployment rate, the United Kingdom chose to abandon the gold standard rather than exacerbate the unemployment problem. Monetary chaos followed in many countries.

2.1.2 The Inter-war Years, 1914–1944

The gold standard as an International Monetary System worked well until World War I interrupted trade flows and disturbed the stability of exchange rates for currencies of major countries. There was widespread fluctuation in currencies in terms of gold during World War I and in the early 1920s. The role of Great Britain as the world's major creditor nation also came to an end after World War I. The United States began to assume the role of the leading creditor nation.

As countries began to recover from the war and stabilise their economies, they made several attempts to return to the gold standard. The United States returned to gold in 1919 and the United Kingdom in 1925. Countries such as Switzerland, France and Scandinavian countries restored the gold standard by 1928.

The key currency involved in the attempt to restore the international gold standard was the pound sterling which returned to gold in 1925 at the old mint parity exchange rate of $4.87/£. This was a great mistake since the United Kingdom had experienced considerably more inflation than the United States and because UK had liquidated most of its foreign investment in financing the war. The result was increased unemployment and economic stagnation in Britain.

Notes The pound's overvaluation was not the only major problem of the restored gold standard. Other problems included the failure of the United States to act responsibly, the undervaluation of the French franc and a general decrease in the willingness and ability of nations to rely on the gold standard adjustment mechanism.

In 1934, the United States returned to a modified gold standard and the US dollar was devalued from the previous $20.67/ounce of gold to $35.00/ounce of gold. The modified gold standard was known as the Gold Exchange Standard. Under this standard, the US traded gold only with foreign central banks, not with private citizens. From 1934 till the end of World War II, exchange rates were theoretically determined by each currency's value in terms of gold. World War II also

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resulted in many of the world's major currencies losing their convertibility. The only major currency that continued to remain convertible was the dollar.

Thus the inter-war period was characterised by half-hearted attempts and failure to restore the gold standard, economic and political instabilities, widely fluctuating exchange rates, bank failures and financial crisis. The Great Depression in 1929 and the stock market crash also resulted in the collapse of many banks.

2.1.3 The Bretton Woods System, 1945–1973

The depression of the 1930s, followed by another war, had vastly diminished commercial trade, the international exchange of currencies and cross-border lending and borrowing. What was left was only memories of what the system had once been. Revival of the system was necessary and the reconstruction of the post-war financial system began with the Bretton Woods Agreement that emerged from the International Monetary and Financial Conference of the united and associated nations in July 1944 at Bretton Woods, New Hampshire.

There was a general agreement that restoring the gold standard was out of question, that exchange rates should basically be stable, that governments needed access to credits in convertible currencies if they were to stabilise exchange rates and that governments should make major adjustments in exchange rates only after consultation with other countries. On specifics, however, opinion was divided. The British wanted a reduced role for gold, more exchange rate flexibility than had existed with the gold standard, a large pool of lendable resources at the disposal of a proposed international monetary organisation and acceptance of the principle that the burden of correcting payment disequilibria should be shared by both, surplus countries and deficit countries. The Americans favoured a major role for gold, highly stable exchange rates, a small pool of lendable resources and the principle that the burden of adjustment of payment imbalances should fall primarily on deficit countries.

The negotiators at Bretton Woods made certain recommendations in 1944:

- Each nation should be at liberty to use macroeconomic policies for full employment. (This tenet ruled out a return to the gold standard.)
- Free-floating exchange rates could not work. Their ineffectiveness had been demonstrated during the 1920s and 1930s. But the extremes of both permanently fixed and free-floating rates should be avoided.
- A monetary system was needed that would recognise that exchange rates were both a national and an international concern.

The agreement established a dollar based International Monetary System and created two new institutions: The International Monetary Fund (IMF) and The International Bank for Reconstruction and Development (World Bank). The basic role of the IMF would be to help countries with balance of payments and exchange rate problems while the World Bank would help countries with post-war reconstruction and general economic development.

The basic purpose of this new monetary system was to facilitate the expansion of world trade and to use the US dollar as a standard of value. The Bretton Woods Agreement produced three propositions (i) The stable exchange rates under the gold standard before World War I were desirable but there were certain conditions to make adjustments in exchange rates necessary (ii) Performance of fluctuating exchange rates had been unsatisfactory and (iii) The complex network of government controls during 1931–1945 deterred the expansion of world trade and investment. However, there were certain conditions which required government controls over international trade and payments.

Notes

Caution The Bretton Woods Agreement placed major emphasis on the stability of exchange rates by adopting the concept of fixed but adjustable rates.

The keystones of the system were (i) no provision was made for the United States to change the value of gold at $35 per ounce and (ii) each country was obligated to define its monetary unit in terms of gold or dollars. While other currencies were required to exchange their currencies for gold, US dollars remained convertible into gold at $35 per ounce. Thus, each country established par rates of exchange between its currency and the currencies of all other countries. Each currency was permitted to fluctuate within plus or minus one per cent of par value by buying or selling foreign exchange and gold as needed. However, if a currency became too weak to maintain its par value, it was allowed to devalue up to ten per cent without formal approval by the International Monetary Fund (IMF).

Thus, the main points of the post-war system evolving from the Bretton Woods Conference were as follows:

1. A new institution, the International Monetary Fund (IMF), would be established in Washington DC. Its purpose would be to lend foreign exchange to any member whose supply of foreign exchange had become scarce. This lending would not be automatic but would be conditional on the member's pursuit of economic policies consistent with the other points of the agreement, a determination that would be made by IMF.
2. The US dollar (and, *de facto*, the British pound) would be designated as reserve currencies, and other nations would maintain their foreign exchange reserves principally in the form of dollars or pounds.
3. Each Fund member would establish a par value for its currency and maintain the exchange rate for its currency within one per cent of par value. In practice, since the principle reserve currency would be the US dollar, this meant that other countries would peg their currencies to the US dollar, and, once convertibility was restored, would buy and sell US dollars to keep market exchange rates within the 1 per cent band around par value. The United States, meanwhile, separately agreed to buy gold from or sell gold to foreign official monetary authorities at $35 per ounce settlement of international financial transactions. The US dollar was thus pegged to gold and any other currency pegged to the dollar was indirectly pegged to gold at a price determined by its par value.
4. A Fund member could change its par value only with Fund approval and only if the country's balance of payments was in "fundamental disequilibrium." The meaning of fundamental disequilibrium was left unspecified but everyone understood that par value changes were not to be used as a matter of course to adjust economic imbalances.
5. After a post-war transition period, currencies were to become convertible. That meant, to anyone who was not a lawyer, that currencies could be freely bought and sold for other foreign currencies. Restrictions were to be removed and, hopefully, eliminated. So, in order to keep market exchange rates within 1 per cent of par value, central banks and exchange authorities would have to build up a stock of dollar reserves with which to intervene in the foreign exchange market.
6. The Fund would get gold and currencies to lend through "subscription." That is, countries would have to make a payment (subscription) of gold and currency to the IMF in order to become a member. Subscription quotas were assigned according to a member's size and resources. Payment of the quota normally was 25 per cent in gold and 75 per cent in the member's own currency. Those with bigger quotas had to pay more but also got more voting rights regarding Fund decisions.

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Breakdown of the Bretton Woods System

The Bretton Woods System worked without major changes from 1947 till 1971. During this period, the fixed exchange rates were maintained by official intervention in the foreign exchange markets. International trade expanded in real terms at a faster rate than world output and currencies of many nations, particularly those of developed countries, became convertible.

The stability of exchange rates removed a great deal of uncertainty from international trade and business transactions thus helping the countries to grow. Also, the working of the system imposed a degree of discipline on the economic and financial policies of the participating nations. During the 1950s and 1960s, the IMF also expanded and improved its operation to preserve the Bretton Woods System.

The system, however, suffered from a number of inherent structural problems. In the first place, there was much imbalance in the roles and responsibilities of the surplus and deficits nations. Countries with persistent deficits in their balance of payments had to undergo tight and stringent economic policy measures if they wanted to take help from the IMF and stop the drain on their reserves. However, countries with surplus positions in their balance of payments were not bound by such immediate compulsions. Although sustained increases in their international resources meant that they might have to put up with some inflationary consequences, these options were much more reasonable than those for the deficit nations.

The basic problem here was the rigid approach adopted by the IMF to the balance of payments disequilibria situation. The controversy mainly centres around the 'conditionality issue,' which refers to a set of rules and policies that a member country is required to pursue as a prerequisite to using the IMF's resources. These policies mainly try and ensure that the use of resources by concerned members is appropriate and temporary. The IMF distinguishes between two levels of conditionality – low conditionality where a member needs funds only for a short period and high conditionality where the member country wants a large access to the Fund's resources. This involves the formulation of a formal financial programme containing specific measures designed to eliminate the country's balance of payments disequilibrium. Use of IMF resources, under these circumstances, requires IMF's willingness that the stabilisation programme is adequate for the achievement of its objectives and an understanding by the member to implement it.

2.1.4 The Flexible Exchange Rate Regime, 1973 – Present

The turmoil in exchange markets did not cease when major currencies were allowed to float since the beginning of March 1973. Since 1973, most industrial countries and many developing countries allowed their currencies to float with government intervention, whenever necessary, in the foreign exchange market. The alternative exchange rate systems which followed are mentioned below:

- ***Crawling Peg (Sliding or Gliding Parity):*** A cross between a fixed rate system and a fully flexible system are the semi-fixed systems such as the crawling peg and the wide band. They differ from fixed rates because of their greater flexibility in terms of the exchange rate movement. But they are not a floating system either because there is still a limit with regard to how far the exchange rate can move.

  Because the infrequent adjustment of the IMF's par value system necessitated a large devaluation at a larger rate, the crawling peg rate was developed. The idea was to adjust the rate slowly by small amounts at any point in time on a continuous basis to correct for any overvaluation and undervaluation. The continuous but small adjustment mechanism (e.g., as little as 0.5 per cent a month or 6 per cent for the whole year) was designed to discourage speculation by setting an upper limit that speculators could gain from devaluation in one year.

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Notes The disadvantage of this system is that it requires countries to have ample reserves for the prolonged process of adjustment. Also, the minor adjustments may not correct the currency's overvaluation or undervaluation.

- ***Wide Band:*** The purpose of the wide band is to compensate for the rigidity of the fixed rate systems. Similar to and yet different from the adjustable peg system, the wide band allows the currency value to fluctuate by say 5 per cent on each side of the par. Not primarily dedicated to exchange rate changes, this system uses the more flexible movement to warn speculators of the more adverse consequence when their guess about the direction of the exchange rate proves to be wrong.

  Under the wide band scheme, a country pursuing more inflationary policies will find the prices of its international goods going up, necessitating a depreciation programme to correct the country's balance of payments in order to slow growth and curb inflation, while eventually risking recession. The country's exchange rate would then sink towards the floor under its par value. Once the fixed limit is reached (i.e., after hitting either the floor or the ceiling), the country is back to the rigidity of the fixed rate all over again. Moreover, if a wide band is desirable because of the increase in flexibility, a country may be better off with no limit for movement at all.

- ***Flexible (Floating) System:*** Under the fixed systems, excessive demand for gold developed and the United States was forced to suspend the sale of gold in 1968, except to official parties. But taking this action did not help and by the late 1960s, the dollar came under increasing pressure because of the prolonged and steep deterioration of the balance of payments. A crisis of confidence developed and foreigners' reluctance to hold dollars resulted in a change in the dollar's historic value. On August 15, 1971, the United States suspended the convertibility of the dollar into gold and other reserve assets altogether and it floated the dollar to force a change in the parity as well as a review of the IMF. The subsequent Smithsonian Agreement resulted in a revaluation of other currencies and the devaluation of the dollar by 10.35 per cent. In February of 1973, following a great deal of speculation against the dollar, the crisis renewed, and a second 10 per cent devaluation followed. The crisis forced the official foreign exchange markets to close in Europe and Japan for about two-and-a-half weeks. When these markets reopened, all major currencies were allowed to float.

  After an initial period of remarkable stability, the dollar sank rapidly for seven weeks because of balance of payments deficits, Watergate revelations, renewed inflation in the United States and a tightening of money abroad. Had the fixed systems been in effect, a traditional crisis would have resulted; foreign exchange markets would have been closed and large-scale adjustment of parities would have been necessary. With the dollar free to float, however, the beneficial effect was that speculative pressures were reflected in a sharp drop in the exchange value of the dollar without a closing of the market. The resultant devaluation, in turn, helped the United States to improve its trade performance.

  In October, 1978, another crisis came along for the US dollar. Concerns over inflation in the United States prompted a panic selling of the dollar and the stock market plunged. In spite of the risk of recession, the Carter administration was forced to take drastic measures because of several reasons: (1) The dollar decline reduced American consumers' purchasing power (2) Soaring prices hurt the anti-inflation programme (3) OPEC members' declining value of their dollar reserves encouraged them to boost oil prices and (4) Stock values lost more than $110 billion, resulting in a large-scale retrenchment of business investment plans. Among the measures taken were an increase in the Federal Reserve's discount rate,

gold sale and dollar buying. Initially, the magnitude of the action took the market by surprise. Gold prices dropped and the bond market, stock market and dollar all rose significantly. Yet, by the end of the month, the strong anti-inflation policies themselves weakened the confidence in the government and chaos ensued. Additional panic selling drove the dollar to record lows. Once again, by allowing the dollar to float, the traditional adverse consequences of market closings and official devaluation were averted.

Under a flexible or floating system, the market force, based on demand and supply, determines a currency's value. A surplus in a country results in an appreciation of its currency, immediate higher prices, mass reserve and opportunity costs. In addition, too much money on reserve leads to a loss of investment opportunities. On the other hand, a country's deficit will lower its currency value, making it easier to export more later.

Self Assessment

Fill in the blanks:

1. Under a ..... system, the market force, based on demand and supply, determines a currency's value.
2. Too much money on reserve leads to a loss of ..... opportunities.
3. Under the ..... scheme, a country pursuing more inflationary policies will find the prices of its international goods going up.
4. The disadvantage of ..... system is that it requires countries to have ample reserves for the prolonged process of adjustment.
5. The basic role of the ..... would be to help countries with balance of payments and exchange rate problems.
6. The World Bank would help countries with post-war reconstruction and general ..... development.
7. The negotiators at Bretton Woods made certain recommendations in .....
8. The fundamental principle of the classical gold standard was that each country should set a ..... value for its currency in terms of gold and then try to maintain this value.

2.2 Classification of Currency Arrangements – Present Day Currency Regimes

A recent classification of the world's currencies, as published in the IMF publication, *International Financial Statistics,* is shown in Table 2.1:

- ***More flexible exchange rate systems:*** Countries such as the Japan and United States are in a more flexible exchange rate system in which currency values are allowed to float in relation to each other. Government intervention has a significant impact on currency values, especially in the short-term. Thus these currencies are not in a truly floating rate system.

  Though managed floating exchange rate systems have no official bounds on currency values, governments do intervene in this system in order to accomplish their policy objectives. Managed floating systems allows governments to implement their policy objectives within a relatively flexible exchange rate system and to coordinate monetary policies with other governments if they choose.

Notes

Table 2.1: Exchange Rate Regimes

Exchange rate regime	Africa	Asia and Pacific region	Europe	Middle East	Americas
Exchange arrangements with no separate legal tender	WAEMU: Benin*, Burkina Faso*, Ivory Coast*, Guinea-Bissau*, Mali*, Niger*, Senegal*, Togo CAEMC; Cameroon*, C. African Rep.*, Chad*, Congo*, Equatorial Guinea, Gabon*	Kiribati, Marshall Islands, Micronesia, Palau	Euro Area: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugual, Spain San Marino, Vatican		Ecuador*, El Salvador, Panama ECCU: Antigua & Barbuda, Dominica, Grenada, St. Kitts Nevis, St. Lucia, St. Vincent & the Grenadines
Currency board or fixed peg arrangements	Botswana, Cape Verde, Comoros, Djibouti*, Lesotho*, Libya, Morocco, Namibia, Seychelles, Sudan, Swaziland, Zimbabwe	Bangladesh, Bhutan, Brunei Darussalam, China, Fiji, Hong Kong, Malaysia, Maldives, Nepal, Samoa, Talwan, Vanuatu	Bosnia-Herzegovina*, Bulgaria*, Estonia*, Latvia*, Lithuania*, Macedonia*, Malta, Turkmenistan	Bahrain, Iran, Jordan*, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria*, United Arab Emirates	Aruba, Argentina*, Belize, Bahamas, Barbados, Netherlands Antilles, Suriname
Crawling pegs or horizontal bands	Egypt	Soloman Islands, Tonga	Belarus, Cyprus, Denmark, Hungary*, Romania*	Egypt, Israel	Bolivia*, Costa Rica, Honduras*, Nicaragua*, Uruguay*, Venezuela
Managed floating with a preannounced path for exchange rates	Algeria, Angola, Burundi, Eritea, Ethiopia*, Ghana*, Guinea*, Kenya*, Mauritania*, Mauritius, Nigeria*, Rwanda, Sao Tome*, Tunisia, Zambia*	Cambodia*, India, Indonesia*, Mongolia*, Myanmar (Laos)*, Pakistan*, Singapore, Sri Lanka*, Thailand*, Vietnam*	Azerbaijan*, Croatia*, Kazakhstan*, Kyrgystan*, Russian Fed., Serbia*, Slovak Rep., Slovenia, Ukraine*, Uzbekistan, Yugoslavia	Iraq*	Dominican Rep., Guatemala, Guyana*, Jamaica*, Paraguay, Trinidad & Tobago*
Independently floating	Congo, Gambia*, Liberia, Malawi*, Madagascar, Mozambique, Sierra Leone*, Somalia, S. Africa, Tanzania, Uganda	Afghanistan, Australia, Japan, New Zealand, Philippines*, S. Korea Papua West Guinea	Albania, Armenia, Czech Rep., Georgia, Iceland, Moldova, Norway, Poland, Sweden, Switzerland, Tajikistan, United Kingdom	Turkey*, Yemen*	Brazil, Canada, Chile, Colombia*, Haiti, Mexico, Peru*, United States

Notes

- ***Pegged exchange rate systems:*** In this system, currency values are fixed in relation to another currency such as the US dollar, Euro or to a currency basket such as the Special Drawing Right (SDR). SDR are an international reserve created by the IMF and allocated to member countries to supplement foreign exchange reserves.

Did u know? The basic disadvantage of a pegged system is that central banks must fight the market to maintain the system even if inflation rates in two countries are the same. There is still a probability that currencies will undergo significant change in market value and "fall out" of a pegged exchange rate system.

- ***Limited flexibility exchange rate systems:*** The limited flexibility category consists of two groups. The first group includes several gulf countries with currencies that have shown limited flexibility in terms of the US dollar. The governments of these oil-producing countries have been able to maintain limited flexibility against the dollar because their major export is oil and oil is priced around the world in US dollars.

  The second group is comprised of countries in the European Exchange Rate Mechanism (ERM). During 1998, the ERM was a cooperative arrangement in which currency values were managed around a control rate called the European Currency Unit (ECU), a basket of currencies weighted by each members proportion of intra European trade and gross national product.

  The limited flexibility exchange rate system attempts to combine the best of the fixed (pegged) period and floating rate (more flexible) systems. First, the short-term currency risk was reduced because foreign exchange rates tended to remain relatively stable within the ERM. Second, as the ERM has an allowable band for movement around the central ECU rate, the system did not need the highly restrictive monetary policies that accompany a fixed exchange rate system. If for some reason a currency would fall below its ERM floor, European central banks would cooperate in buying the currency in an attempt to keep it within its ERM band.

Self Assessment

Fill in the blanks:

9. In …… system, currency values are fixed in relation to another currency such as the US dollar, Euro or to a currency basket such as the special drawing right (SDR).
10. …… are an international reserve created by the IMF and allocated to member countries to supplement foreign exchange reserves.
11. The basic disadvantage of a pegged system is that central banks must fight the market to maintain the system even if …… rates in two countries are the same.

Task "Dollar has a very prominent position in the world trade today." Do you agree? Elucidate with example.

Notes

Caselet

Currency Reserve

The outbreak of the current crisis and its spillover in the world have confronted us with a long-existing but still unanswered question, i.e., what kind of international reserve currency do we need to secure global financial stability and facilitate world economic growth, which was one of the purposes for establishing the IMF? There were various institutional arrangements in an attempt to find a solution, including the Silver Standard, the Gold Standard, the Gold Exchange Standard and the Bretton Woods system. The above question, however, as the ongoing financial crisis demonstrates, is far from being solved, and has become even more severe due to the inherent weaknesses of the current international monetary system.

Theoretically, an international reserve currency should first be anchored to a stable benchmark and issued according to a clear set of rules, therefore to ensure orderly supply; second, its supply should be flexible enough to allow timely adjustment according to the changing demand; third, such adjustments should be disconnected from economic conditions and sovereign interests of any single country.

Source: *International Financial Management*, Madhu Vij, Excel Books.

2.3 European Monetary System

European countries were concerned about the negative impact of volatile exchange rates on their respective economies since the collapse of the Bretton Woods Agreement on fixed exchange rates in the early 1970s. Attempts were made to salvage the Bretton Woods System by defining the parities and widening the bands of variations to 2.25%. This was the Smithsonian Agreement which was signed in December 1971 and was also known as the 'snake'. The 'snake' was designed to keep the European Economic Community (EEC) countries exchange rates within a narrower band of 1.125% for their currencies. Thus this system allowed a wider band of 2.25% against the currencies of other countries while maintaining a narrower band of 1.125% for their currencies. The 'snake' got its name from the way EEC currencies moved together closely within the wider band allowed for other currencies like the dollar.

The snake was adopted by the EEC countries because they felt that stable exchange rates among the EEC countries was essential for deepening economic integration and promoting intra-EEC trade. Members of the EEC rely heavily on trade with each other so the day to day benefits of a relatively stable exchange rate between them could be perceived to be great. However, the snake arrangement was replaced by the European Monetary System (EMS) in 1979 and has since then undergone a number of major changes including major crisis and reorganisation in 1992 and 1993. The chief objectives of the EMS were to:

1. Form a "zone of monetary stability" in Europe.
2. Coordinate the exchange rate policies vis-á-vis the non EMS currencies.
3. Help in the eventual formation of a European Monetary Union. The EMS had three components:
   - (i) Exchange Rate Mechanism (ERM)
   - (ii) European Currency Unit (ECU)
   - (iii) European Monetary Cooperation Fund (EMCF)

Notes

2.3.1 Exchange Rate Mechanism (ERM)

It refers to the procedure by which the EMS member countries collectively manage their exchange rates. The ERM is based on a 'parity grid mechanism' that places an upper and lower limit on the possible exchange rates between each pair of member currencies. In a parity grid mechanism each country is obliged to intervene whenever its exchange rate reaches the upper or lower limit against any other currency. The parity grid system, in the ERM, is in the form of a matrix showing for each pair of currencies the par value in addition to the highest and lowest permitted exchange rates. Thus there are specified bilateral exchange rates among all member countries which, in fact, constitutes a grid. Each currency is then allowed to fluctuate 2¼ per cent above and below the par rates. Each currency has hence got three exchange rates: the par value, an upper limit and a lower limit. If an exchange rate is at either limit, 'indicators of divergence' are encountered that mandate bilateral actions for the maintenance of the central rates by both the countries.

The ERM has, thus, got three features – (1) A bilateral responsibility for the maintenance of exchange rates (2) Availability of additional support mechanism that helps in maintaining the parities; (3) If the currencies irretrievably diverge from parity a last resort or safety valve of agreed upon realignments.

Example: If the Spanish peseta was at its lower support point vis-a-vis the German mark, the Spanish authorities were required to buy Spanish peseta and the German authorities were also supposed to sell marks. The fact that the Germans were also required to sell marks made the ERM fundamentally different from the Bretton Woods System. In the Bretton Woods System only one country had to undergo painful measures while the other country was not required to cooperate.

2.3.2 European Currency Unit (ECU)

The ECU is a "basket" currency based on a weighted average of the currencies of member countries of the European Union. The weights are based on each country's relative size of GNP and on each members' share of intra-European Union trade. The ECU's value varies over time as the members currencies float jointly with respect to the US dollar and other non member currencies. The ECU serves as the accounting unit of the EMS and helps in the working of the exchange rate mechanism. In fact, the ECU since Jan 1, 1999 has evolved into the common currency of the European union and is called the 'Euro'.

Two kinds of mechanism were energised in the EMS. One mechanism was based on the parity grid while the other was in terms of a divergence indicator defined with reference to the ECU.

In the divergence indicator mechanism, each country's central rate against the ECU is determined and the permissible margins of variations around this are specified. When the rate moves outside these margins, the onus of adjustment is on the country concerned. For example, if the German mark appreciates against all other currencies, it would also appreciate against the ECU since the ECU is a basket of all the member countries. When the mark moves beyond the upper limit, Germany will have to intervene and take appropriate action or explain to other EMS members why it should not. Only as a last resort were par values realigned, although this happened on several occasions.

2.3.3 European Monetary Cooperation Fund (EMCF)

Like the IMF, the EMS has its own institutional set up for monetary cooperation. Member countries extend credit to each other for the purpose of carrying out exchange market intervention

Notes

through the European Monetary Cooperation Fund (EMCF). The EMCF gives various short-term and medium-term credit facilities depending upon the deficit country's needs. Very short-term financing is granted for 45 days, short-term monetary support for three months renewable up to two times, medium-term financial assistance for a period of two to five years. Credit facilities are granted directly by one member country to another and are accounted for in ECU terms through the EMCF.

Task 'The International Monetary System, as we have today, has evolved through several different exchange rate arrangements over a period of time'. Comment.

Self Assessment

Fill in the blanks:

12. The European Currency Unit serves as the accounting unit of the EMS and helps in the working of the ……..
13. The …… gives various short-term and medium-term credit facilities depending upon the deficit country's needs.
14. Exchange rate mechanism refers to the procedure by which the EMS member countries collectively manage their ……..
15. The …… is a "basket" currency based on a weighted average of the currencies of member countries of the European Union.

Case Study

International Financial Market

The recent turmoil in financial markets has led to an uncertain situation. Although market liquidity problems should recede in the coming time, wider credit spreads would persist, reflecting a welcome reappraisal of risk following a period of unusual compression. Inevitably, there will be some impact from tight credit conditions on activity. Accordingly, the IMF growth forecast for the coming years will be marked down, but growth will nonetheless remain at a strong level. IMF expects the macroeconomic impact to be greatest in the United States, where the housing correction is likely to be more prolonged than we thought previously. Tighter credit conditions could also dampen domestic demand in Europe and Japan, and there may be trade and financial spill-over elsewhere too.

A combination of solid fundamentals and appropriate action by central banks and other authorities could help to calm rough financial waters and provide resilience to the global economic expansion. In advanced economies, economic fundamentals remain solid. The balance sheets of core financial institutions were strong at the onset of the current market turbulence, while the financial positions of corporations remain robust. These economies also entered into the period of turmoil with positive levels of business confidence, and generally healthy situations in labour markets and household net wealth.

As for Emerging Market Countries (EMCs), recent growth momentum has been very strong and improved balance sheets and policy frameworks have provided resilience in

Contd...

Notes

the face of the current turmoil. Many EMCs now have current account surpluses, and have built up substantial international reserves. Fiscal and monetary policy frameworks have also improved in many of these countries. Price stability has become the cornerstone of monetary policy, and a number of countries have adopted, or are moving to adopt, inflation targeting. Many also have flexible exchange rate regimes, which can act as a shock absorber to rapid changes in external circumstances. And their direct exposure to the U.S. subprime market remains quite small. As a result of these positive factors, EMCs have been relatively less affected by the recent turbulence.

Questions

1. Discuss the challenges to the international monetary system.
2. Do you think recent events in financial markets point to a rebalancing of the assessment and pricing of risk, which will likely lead to a rebalancing of currencies and growth in the foreseeable future. Elucidate.

Source: *International Financial Management*, Madhu Vij, Excel Books.

2.4 Summary

- Changes in the International Monetary System have been driven largely by the rapid growth of private international capital flows, which first overwhelmed the Bretton Woods fixed exchange rate system, and, since the 1980s, have had especially strong effects on the emerging market countries.
- Increasingly the discretion of national policymakers is constrained by international capital markets, which magnify the rewards for good policies and the penalties for bad policies. But markets may, on occasion, overreact by responding late and excessively to change in underlying conditions.
- The International Monetary System has had to adapt to the increasing role of private capital flows. That process was evident in the shift towards flexible exchange rates among the major currencies three decades ago, and it continues today, as we absorb and react to the lessons of the emerging market crises of the last decade.
- The gold standard worked well until World War I interrupted trade flows and disturbed the stability of exchange rate for currencies. The inter-war years from 1914-1944 were characterised by political instabilities and financial crisis.
- The Bretton Woods System, which played a major emphasis on the stability of exchange rates, worked from 1945–1972. However it came under mounting pressure as the post-war growth of international trade was complemented by an even more dramatic expansion of cross-border capital flows. These starkly revealed the difficulty of fixed exchange rate, an open capital account, and a monetary policy dedicated to domestic economic goals. With the leading countries unwilling to subordinate domestic policies to maintenance of the exchange rate, the fixed exchange rate regime among the major economies gave way.
- Today, the flexible (floating) exchange rate is prevalent, wherein the market force, based on demand and supply, determines a currency's value.
- Both fixed and floating exchange rates have their own advantages and disadvantage.
- The main objective of the EMS was to coordinate the exchange rate policies vis-à-vis the non EMS currencies and to form a zone of monetary stability in Europe. It has three components – the ERM, the ECU and the EMCF.

Notes

2.5 Keywords

European Currency Unit (ECU): The ECU is a "basket" currency based on a weighted average of the currencies of member countries of the European Union.

Exchange Rate Mechanism: It refers to the procedure by which the EMS member countries collectively manage their exchange rates.

Flexible or Floating System: The market force, based on demand and supply, determines a currency's value.

International Monetary System: The international monetary system consists of elements such as laws, rules, agreements, institutions, mechanisms and procedures which affect foreign exchange rates, balance of payments adjustments, international trade and capital flows.

Limited Flexibility Exchange Rate System: Limited flexibility exchange rate system attempts to combine the best of the fixed (pegged) period and floating rate (more flexible) systems.

Pegged Exchange Rate Systems: In this system, currency values are fixed in relation to another currency such as the US dollar, Euro or to a currency basket such as the special drawing right (SDR).

SDR: SDR are an international reserve created by the IMF and allocated to member countries to supplement foreign exchange reserves.

Wide Band Scheme: Wide band scheme a country pursuing more inflationary policies will find the prices of its international goods going up, necessitating a depreciation programme to correct the country's balance of payments in order to slow growth and curb inflation, while eventually risking recession.

2.6 Review Questions

1. Explain how these exchange-rate systems function (a) gold standard (b) par value (c) crawling peg (d) wide band and (e) floating.
2. Both fixed and floating rates claim to promote exchange rate stability while controlling inflation. Is it possible for these two divergent systems to achieve the same goals?
3. Should the world adopt a basket of the five or ten leading currencies (e.g., US dollar, Japanese yen, Swiss franc, etc.) as a global currency for international trade?
4. Briefly explain the changes in the present International Monetary System that you consider likely to occur in the near future. Why?
5. Under the current system of managed floating, have the exchange rate movements been excessive? Explain.
6. What lessons can economists draw from the breakdown of the Bretton Woods System?
7. What do you think were the major reasons for the currency 'crisis' of September 1992?
8. Trace the evolution of foreign exchange from fixed to floating exchange rates in the International Monetary System.
9. Describe the exchange rate arrangements that are permitted by the International Monetary Fund.
10. How are exchange rates determined in the following three systems: freely fluctuating, manage-fixed exchange rate and automatic-fixed exchange rate?

Notes

Answers: Self Assessment

1. flexible or floating
2. investment
3. wide band
4. crawling peg
5. IMF
6. Economic
7. 1944
8. Par
9. Pegged exchange rate
10. SDR
11. Inflation
12. Exchange rate mechanism
13. EMCF
14. Exchange rates
15. ECU

2.7 Further Readings

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Unit 3: Foreign Exchange Market and Exchange Rates

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Objectives

After studying this unit, you will be able to:

- Explain the evolution of foreign exchange market
- Discuss the foreign exchange rate
- Describe the exchange rate determination

Introduction

International transactions, like domestic transactions, require money flows at some points. In international transactions, however, money flows often require the use of currencies other than the national currencies of the parties to the transactions. The Foreign Exchange Market is the market which accommodates the Currency preferences of the parties involved and helps convert one Currency into the other Currency. It encompasses all transactions involving the exchange of different monetary units for each other.

In the Foreign Exchange Market, currencies are bought and sold against each other. Most trading takes place in a few select currencies – the US dollar, Japanese yen, British pound sterling, Swiss franc, Canadian dollar, Australian dollar. It takes over two months average trading on New York Stock Exchange (NYSE) to match one day trading on the forex market. The Indian Foreign Exchange Market is very small compared to the global 24 hours Foreign Exchange Market. The Indian turnover is only around $ 5-10 billion/day. Amongst this, Spot transactions constitute about 50% of the turnover, outright forward 25% and the rest is in Swap transactions.

Notes

The Foreign Exchange Market is worldwide in scope and the major world's trading centres are in Tokyo, Singapore, New York, Frankfurt, Zurich and San Francisco. Many other cities are also major forex market centres.

All these centres are in constant contact with each other and are connected through highly sophisticated telecommunications networks. Banks, professional dealers and brokers obtain exchange rate quotes on desktop computer screens and communicate with each other by telephone, computer, fax and telex. The communication network connecting all the centres is very efficient such that an exchange rate change in one centre has an almost immediate impact on forex trading in other centres.

3.1 Evolution of Foreign Exchange Market

The Foreign Exchange Market started evolving during the 1970s when the countries all over the world gradually switched to floating exchange rate from their existing exchange rate regime, which remained fixed as per the Bretton Woods system till 1971.

According to the Bank for International Settlements, April 2007, average daily turnover in global foreign exchange markets is estimated at $3.98 trillion. Trading in the world's main financial markets accounted for $3.21 trillion of this. This approximately $3.21 trillion in main Foreign Exchange Market turnover was broken down as follows:

- $1.005 trillion in Spot transactions
- $362 billion in outright Forwards
- $1.714 trillion in foreign exchange Swaps
- $129 billion estimated gaps in Reporting

Of the $3.98 trillion daily global turnover, trading in London accounted for around $1.36 trillion, or 34.1% of the total, making London by far the global center for foreign exchange. In second and third places respectively, trading in New York accounted for 16.6%, and Tokyo accounted for 6.0%. In addition to "traditional" turnover, $2.1 trillion was traded in derivatives.

Table 3.1 gives the Top 10 Currency traders. The ten most active traders account for almost 80% of trading volume, according to the 2008 Euromoney FX survey.

Table 3.1: Top Ten Currency Traders (2012)

Rank	Name	Volume
1	Deutsche Bank	15.64%
2	Barclays Capital	10.75%
3	UBS AG	10.59%
4	Citi	8.88%
5	JPMorgan	6.43%
6	HSBC	6.26%
7	Royal Bank of Scotland	6.20%
8	Credit Suisse	4.80%
9	Goldman Sachs	4.13%
10	Morgan Stanley	3.64%

Source: http://forex1.ucoz.com/index/top_10_currency_traders/0-11

Notes

The main trading center is London, but New York, Tokyo, Hong Kong and Singapore are all important centers as well. Banks throughout the world participate. Currency trading happens continuously throughout the day; as the Asian trading session ends, the European session begins, followed by the North American session and then back to the Asian session, excluding weekends.

Currencies are traded against one another. Each pair of currencies thus constitutes an individual product and is traditionally noted XXX/YYY, where YYY is the ISO 4217 international three-letter code of the Currency into which the price of one unit of XXX is expressed (called base Currency). For instance, EUR/USD is the price of the Euro expressed in US dollars, as in 1 Euro = 1.5465 dollar. Out of convention, the first Currency in the pair, the base Currency, was the stronger Currency at the creation of the pair. The second Currency, counter Currency, was the weaker Currency at the creation of the pair.

Notes The factors affecting XXX will affect both XXX/YYY and XXX/ZZZ. This causes positive Currency correlation between XXX/YYY and XXX/ZZZ.

On the Spot Market, according to the BIS study, the most heavily traded products were:

- EUR/USD: 27%
- USD/JPY: 13%
- GBP/USD (also called sterling or cable): 12%

Did u know? Trading in the Euro has grown considerably since the currency's creation in January 1999. As of now the Foreign Exchange Market is dollar-centered.

3.1.1 Information and Communication Systems

Communications, pertaining to international financial transactions, are handled mainly by a large network called Society for Worldwide Interbank Financial Telecommunications (SWIFT). This is a non-profit Belgian cooperative with main and regional centres around the world connected by data transmission lines. Depending on the location, a bank can access a regional processor or main centre which then transmits the information to the appropriate location. This computer based communications system links banks and brokers in every financial centre. The banks and brokers are in almost instant contact, with activity in some financial centre or other 24 hours a day. Because of the speed of communications, significant events have almost instantaneous impact despite huge distances separating market participants.

3.1.2 Functions of the Foreign Exchange Market

The Foreign Exchange Market is the market in which individuals firms and banks buy and sell foreign currencies or foreign exchange. Every country has its own Currency which is used to quote the price of goods and services. For example dollar is used in the United States of America; pound is used in the United Kingdom, yen in the Japan and Euro in the European member countries.

The principle function of the Foreign Exchange Market is the transfer of funds from one nation and Currency to another. Transfer of purchasing power is necessary because international trade and capital transactions usually involve parties living in countries with different national currencies. Each party wants to trade and deal in his own Currency but since the trade can be

invoiced only in a single Currency, the parties mutually agree on a Currency beforehand. The Currency agreed could also be any convenient third country Currency such as the US dollar. For, if an Indian exporter sells machinery to a UK importer, the exporter could invoice in pound, rupees or any other convenient Currency like the US dollar.

Notes The transfer of funds function is performed through T.T, M.T, Draft, Bill of exchange, Letters of Credit, etc. The bill of exchange is the most important and effective method of transferring purchasing power between two parties located in different countries.

Another important function of Foreign Exchange Market is to minimize Foreign Exchange Risk. The Foreign Exchange Market performs the Hedging function covering the risks on foreign exchange transactions. These are the risks of unexpected changes in Foreign Exchange Rates.

3.1.3 Participants in the Foreign Exchange Market

Why do individuals, firms and banks want to exchange one national Currency for another? The demand for foreign currencies arises when tourists visit another country and need to exchange their national Currency for the Currency of the country they are visiting, when a domestic firm wants to import from other nations, when an individual wants to invest abroad and so on. On the other hand, a nation's supply of foreign currencies arises from foreign tourist expenditures in the nation, from export earnings, from receiving foreign investments, and so on. For example, suppose a US firm exporting to the UK is paid in pounds sterling (the UK Currency). The US exporter will exchange the pounds for dollars at a commercial bank. The commercial bank will then sell these pounds for dollars to a US resident who is going to visit the UK or to a United States firm that wants to import from the UK and pay in pounds, or to a US investor who wants to invest in the UK and needs the pounds to make the investment.

Thus, a nation's commercial banks operate as clearing houses for the foreign exchange demanded and supplied in the course of foreign transactions by the nation's residents. In the absence of this function, a US importer needing UK pounds, for instance, would have to locate a US exporter with pounds to sell. This would be very time consuming and inefficient and would essentially revert to barter trade. Those US commercial banks that find themselves with an over-supply of pounds will sell these excess pounds (through intermediary foreign exchange brokers) to commercial banks that happen to be short of pounds in satisfying their customers' demand for pounds. In the final analysis, then, a nation pays for its tourist expenditures abroad, its imports, its investments abroad and so on with its foreign exchange earnings from tourism, exports and the receipt of foreign investments.

If the nation's total demand for foreign exchange in the course of its foreign transactions exceeds its total foreign exchange earnings, the rate at which currencies exchange for one another will have to change to equilibrate the total quantities demanded and supplied. If such an adjustment in the exchange rates were not allowed, the nation's commercial banks would have to borrow from the nation's central bank. The nation's central bank would then act as the "lender of last resort" and draw down its foreign exchange reserves. On the other hand, if the nation generated an excess supply of foreign exchange in the course of its business transactions with other nations (and if adjustment in exchange rates were not allowed), this excess supply would be exchanged for the national Currency at the nation's central bank, thus, increasing the nation's foreign Currency reserves.

Thus, four levels of transactors or participants can be identified in foreign exchange markets. At the first level are tourists, importers, exporters, investors, and so on. These are the immediate

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users and suppliers of foreign currencies. At the next, or second level, are the commercial banks which act as clearing houses between users and earners of foreign exchange. At the third level are foreign exchange brokers through whom the nation's commercial banks even out their foreign exchange inflows and outflows among themselves. Finally, at the fourth and highest level is the nation's central bank which acts as the lender or buyer of last resort when the nation's total foreign exchange earnings and expenditures are unequal. The central bank then either draws down its foreign exchange reserves or adds to them.

Self Assessment

State whether the following statements are true or false:

1. Communications, pertaining to international financial transactions, are handled mainly by a large network called System for Worldwide Interbank Financial Telecommunications (SWIFT).
2. The principle function of the Foreign Exchange Market is the transfer of funds from one nation and Currency to another.

3.2 Foreign Exchange Rates

This section tries to demonstrate how the exchange rates are determined under a flexible exchange rate system.

Assume, for simplicity, that there are only two nations, the US and the UK, with dollars ($) being the domestic Currency and the pound sterling (£) as the foreign Currency. The exchange rate (R) between the dollar and the pound is equal to the number of dollars needed to purchase one pound. That is R = $/£. For example, if R = $/£=2, this means that two dollars are required to purchase one pound.

Figure 3.1: Exchange Rate under a Flexible Exchange Rate System

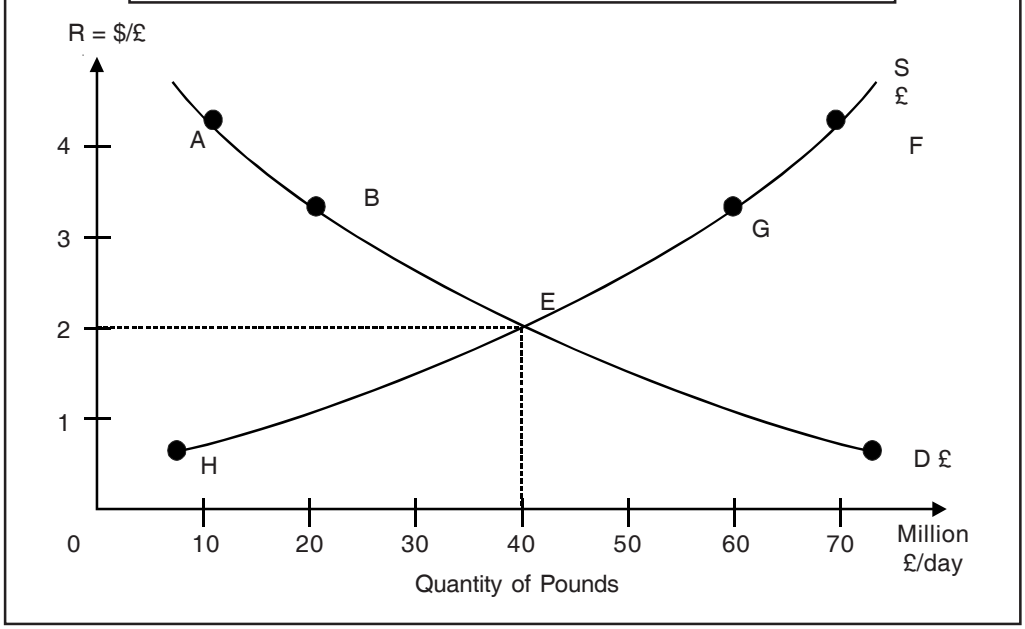

Figure 3.1 shows the determination of the equilibrium exchange rate between US and UK under a flexible exchange rate system. The vertical axis measures the dollar price of pounds or the

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exchange rate, R = $/£ and the horizontal axis measures the quantity of pounds. The equilibrium exchange rate is determined by the intersection of the market demand and supply curves for pounds at point E, i.e., at R = 2. At this point, the quantity of pounds demanded and the quantity of pounds supplied are equal to £40 million per day. At an exchange rate lower than R = 2 or at an exchange rate higher than R = 2, the quantity of pounds demanded will not match with the quantity of pounds supplied and the tendency for the exchange rate will be to move towards R = 2.

The US demand for pounds is negatively inclined, indicating that the lower the exchange rate (R), the greater is the quantity of pounds demanded by the US. The reason is that the lower is the exchange rate (i.e., the fewer the number of dollars required to purchase one pound), the cheaper it is for the US to import from and to invest in the UK and thus, the greater is the quantity of pounds demanded by US residents. On the other hand, the US supply of pounds is usually positively inclined (as in the figure), indicating that the higher the exchange rate (R), the greater is the quantity of pounds earned by or supplied to the US. The reason is that at higher exchange rates, UK residents receive more dollars for each of their pounds. As a result, they find US goods and investments cheaper and more attractive and spend more in the US, thus supplying more pounds to the US.

If the US demand curve for pounds shifted upwards (for example, as a result of increased US tastes for British goods) and intersected the US supply curve for pounds at point G, the equilibrium exchange rate would be R=3 and the equilibrium quantity of pounds would be £60 million per day. The dollar would then be said to have depreciated since it now requires three (instead of the previous two) dollars to purchase one pound. Depreciation thus refers to an increase in the domestic price of the foreign Currency. On the other hand, if the US demand curve for pounds shifted down so as to intersect the US supply curve for pounds at point H (Figure 3.1), the equilibrium exchange rate would fall to R = 1, and the dollar would be said to have appreciated (because fewer dollars are now required to purchase one pound). Appreciation thus refers to a decline in the domestic price of the foreign Currency. An appreciation of the domestic Currency means a depreciation of the foreign Currency and vice versa. Shifts in the US supply curve for pounds would similarly affect the equilibrium exchange rate and equilibrium quantity of pounds.

The above discussion only deals with two currencies. However, in reality, there are a number of exchange rates, one between any pair of currencies. That is, besides the exchange rate between the US dollar and the British pound, there is an exchange rate between the US dollar and the Indian rupee, between the US dollar and the French franc, between the British pound and the French franc, between the British pound and the Indian rupee and so on. Since a Currency can depreciate with respect to some currencies and appreciate against others, an effective exchange rate is calculated. This is a weighted average of the exchange rates between the domestic Currency and the nations' most import trade parties, with weights being assigned according to the relative importance of the nations' trade with each of these trade partners.

Arbitrage

The term "Arbitrage" refers to the purchase of a Currency by Speculators in the monetary centre where it is cheaper for immediate resale in the monetary centre where it is more expensive so as to make a profit. The process of Arbitrage helps in keeping the exchange rate between any two currencies the same in different monetary centres.

Example: If the dollar price of pounds were $1.98 in New York and $2.01 in London, an arbitrager (usually a commercial bank or a foreign exchange dealer) would purchase pounds at $1.98 in New York and immediately resell them in London for $2.01, thus realising a profit of $0.03 per pound. If the transaction involved £1 million, the profit would be $30,000 for only a

Notes

few minutes work. The example has, however, not deducted the transactions expenses, telephone charges and other costs associated with conducting the deal, from the profit. Since these costs are minimal, we tend to ignore them here.

However, as Arbitrage continues, the exchange rate between the two currencies tends to get equalised in the two monetary centres. What actually happens is that the sale of pounds in London increases the supply of pounds there, thus resulting in a decrease in the dollar price of pounds in London. In New York, Arbitrage increases the demand for pounds in New York thereby increasing the dollar price of pounds in New York. This process continues till the dollar prices become equal in the two countries so that Arbitrage does not remain profitable now.

In the above example, only two currencies and two monetary centres were involved in the Arbitrage analysis. When this is so, we have Two-point Arbitrage. When three currencies and three monetary centres are involved, we have a triangular or three-point Arbitrage. Triangular Arbitrage also operates in the same manner as Two-point Arbitrage, though it is not very popular. Triangular Arbitrage operates so as to ensure consistent Indirect or cross exchange rates between the three currencies in the three monetary centres.

Consider the following exchange rates

$2 = £1 in New York

£0.2 = 1 DM in London

2.5 DM = $1 in Frankfurt

These Cross Rates are consistent because $2 = £1 = 5DM and no possibility of profitable Arbitrage exists. But if the dollar price of pounds was $1.96 in New York, with other exchange rates remaining the same, then it would pay to use $1.96 to purchase £1 in New York, use the £1 to buy 5DM in London and exchange the 5DM in London for $2 in Frankfurt thus realising a $0.04 profit on each pound transferred.

Thus, Triangular Arbitrage eliminates inconsistent Cross Rates and the profitability of further Arbitrage by increasing the demand for the Currency in the monetary centre where the Currency is cheaper and by also increasing the supply of the Currency in the monetary centre where the Currency is more expensive. In effect, Triangular Arbitrage results in consistent Cross Rates among all pairs of currencies, thus helping to unify all international monetary centres into a single market.

Self Assessment

State whether the following statement is true or false:

3. The term "Arbitrage" refers to the purchase of a Currency by Speculators in the monetary centre where it is cheaper for immediate resale in the monetary centre where it is more expensive so as to make a profit.

Caselet

Apex Corporation (CIA)

Apex Corp. is a US based MNC that has been in international business for the last several years. It has been conducting business with all the major countries of the world. One of the countries has allowed for its Currency value to be market determined. The Spot rate of Currency is $.85. In addition the one year forward rate being

Contd...

Notes

quoted in the market is $.82. As a step to build the economy, the country is also allowing foreign investors to make investments. Various incentives are being offered by the country to attract foreign funds. The rate of interest on one year government securities is presently 16%. This is substantially higher than the 10% rate which is presently offered on one year US government securities.

Apex Corp. has asked you, as an employee in their international Money Market division, to assess the feasibility of making a short term investment in this country. The amount available for making the investment for the next year is $ 12 million.

The Apex Corp. has also come to know that the exchange rate in this country will be market determined for the next few years. Financial managers in Apex Corp. are hence apprehensive about the high volatility of the Currency till an equilibrium is reached. It is expected that the value of Currency in one year will be approx. $.85. However, there is a high degree of uncertainty attached with this value and predictions are being made that the actual value may be 30% above or below this expected value.

Source: *International Financial Management*, Madhu Vij, Excel Books.

Task What problems do you think you would face as a business trying to operate in two different foreign exchange markets?

3.3 Exchange Rate Determination

An exchange rate can be defined as the number of units of one Currency that must be given to acquire one unit of a Currency of another country. It is the price paid in the home Currency to purchase a certain quantity of funds in the Currency of another country. For example, it takes about ₹ 48.10 to purchase one US dollar and ₹ 8.10 to purchase one Euro. The exchange rate is the link between different national currencies that makes international price and cost comparisons possible.

The Foreign Exchange Market includes both the Spot and Forward Exchange Rates. The Spot rate is the rate paid for delivery within two business days after the day the transaction takes place. If the rate is quoted for delivery of foreign Currency at some future date, it is called the forward rate. In the forward rate, the exchange rate is established at the time of the contract, though payment and delivery are not required until maturity. Forward rates are usually quoted for fixed periods of 30, 60, 90 or 180 days from the day of the contract.

3.3.1 Foreign Exchange Quotations

The exchange rate quotation states the number of units of a price Currency that can be bought in terms of one unit of another Currency.

Quotes in Basis Point

For most currencies, foreign exchange quotations are given to the fourth decimal place - that is to one-hundredth of one percent or 1/10,000. This is usually called a 'pip'. For a few currencies like Japanese yen and the Italian lira that are relatively small in absolute value, quotes may be carried to two decimal places and a 'pip' is 1/100 of the Currency unit. In a foreign Currency market a 'pip' or a 'tick' (as it is also sometimes called) is the smallest amount by which a price can move. 'Pip' is the term commonly used in the markets.

Notes

In practice, foreign exchange quotations for currencies generally follow two conventions. The two methods are referred to as the Direct (American) and Indirect (European) methods of quotation.

Direct/American Quotation

The most common way of stating a foreign exchange quotation is in terms of the number of units of home Currency needed to buy one unit of foreign Currency. This is known as the Direct Quote. Direct Quotations are also known as American quotes. The prices of Currency Futures Contracts traded on the Chicago Mercantile Exchange are quoted using the Direct method. Direct exchange rate quotations are most frequently used by banks in dealing with their non-bank customers.

Direct quotation: 1 foreign Currency unit = x home Currency units

India quotes its exchange rates in terms of the amount of rupees that can be exchanged for one unit of foreign Currency. For example, if the Indian rupee is the home Currency and the foreign Currency is the dollar, then the exchange rate between the rupee and the dollar might be stated as:

$ 1/₹ 49.6100

This means that for one Dollar, one can buy 49.6100 Rupees.

If the home Currency is dollar, a Direct quotation of the exchange rate between dollar and the Euro is:

1.0/$1.32421,

indicating that the dollar cost of one Euro is $1.32421.

Indirect/European Quotation

Indirect quotations refer to the Price of foreign Currency in terms of one unit of home Currency. In this method, also known as the European Terms, the rate is quoted in terms of the number of units of the foreign Currency for one unit of the domestic Currency.

Indirect quotation: 1 home Currency unit = x foreign Currency units

For example, an Indirect quotation, for the exchange rate between the dollar and the rupee will be ₹ 1/$.0201572/, indicating that one rupee can purchase .0202572 dollars.

Caution Both Direct and Indirect quotes are in use. In the US, it is common to use the Direct Quote for domestic business. For international business, banks generally use European Terms.

Short Dated and Broken Date Contracts

'Short dated' and 'broken date' contracts are terms used in foreign exchange trading and Euromarket in connection with the delivery of Currency.

Foreign exchange contracts are normally based on standard quoted periods, such as one, two or three months forward. If the foreign exchange trading takes place on a nonstandard date; for example 25 days instead of 30 days or 47 days instead of 60 days it would be termed a 'broken date' contract.

Notes

A short dated contract would be contract where the value date for the transaction is before the Spot value date. Normally a Spot transaction is settled within two business days after the day of the transaction. If the transaction is for a shorter maturity and the contract is settled on the day or the next day, it would be termed a short dated contract. Normally, these transactions are used for rolling over the maturity positions in foreign exchange contracts.

3.3.2 Cross Rates of Exchange

An exchange rate between two currencies that is derived from the exchange rates of those currencies with a third Currency is known as a cross rate of exchange. A cross rate can be obtained by multiplying two exchange rates by each other so as to eliminate a third Currency that is common to both rates. The most common use of cross rate calculations is to determine the exchange rate between two currencies that are quoted against the US dollar but not against each other.

Table 3.2: Cross Currency Rates

Cross Currency Rates

	AUD	CAD	CHF	CZK	EUR	GBP	ILS	JPY	NOK	NZD	PLN	SGD	USD	ZAR
AUD		0.9127	0.9545	17.822	1.5822	2.3352	3.7246	106.22	5.0011	1.1066	2.3719	1.3203	0.8712	6.0613
CAD	1.0956		1.1478	19.525	1.4441	2.1315	4.0806	116.37	5.4792	0.8248	2.5986	1.4465	1.0478	6.6407
CHF	1.0476	0.8712		17.011	1.6575	2.4465	3.5552	101.39	4.7737	0.9467	2.2640	1.2602	1.2026	5.7856
CZK	0.0561	0.0512	0.0588		28.197	41.618	4.785	5.96	3.564	16.104	0.1331	0.0741	20.458	2.9402
EUR	0.6320	0.6925	0.6033	0.0355		0.6775	5.8929	168.06	7.9125	1.7509	3.7527	2.0889	1.3783	9.5899
GBP	0.4282	0.4692	0.4087	0.0240	1.4760		8.6979	248.05	11.6788	2.5843	5.5389	3.0832	2.0344	14.1546
ILS	0.2685	0.2451	0.2813	0.2090	0.1697	0.1150		3.5065	0.7448	3.3657	0.6368	2.8211	4.2755	1.6274
JPY	0.0094	0.0086	0.0099	0.1678	0.0060	0.0040	0.2852		21.24	95.98	44.78	80.45	121.93	17.52
NOK	0.2000	0.1825	0.2095	0.2806	0.1264	0.0856	1.3427	0.0471		4.5192	0.4743	3.7879	5.7408	1.2120
NZD	0.9036	1.2124	1.0563	0.0621	0.5711	0.3870	0.2971	0.0104	0.2213		2.1433	1.1930	0.7872	5.4772
PLN	0.4216	0.3848	0.4417	7.5137	0.2665	0.1805	1.5703	0.0223	2.1085	0.4666		1.7965	2.7227	0.3913
SGD	0.7574	0.6913	0.7935	13.4984	0.4787	0.3243	0.3545	0.0124	0.2640	0.8382	0.5566		1.5156	0.2178
USD	1.1479	0.9544	0.8315	0.0489	0.7255	0.4916	0.2339	0.0082	0.1742	1.2703	0.3673	0.6598		6.9578
ZAR	0.1650	0.1506	0.1728	0.3401	0.1043	0.0706	0.6145	0.0571	0.8251	0.1826	2.5555	4.5909	0.1437	

Source: http://www.onlineforextradingblog.com/

3.3.3 Spot Market and the Forward Market

The Foreign Exchange Market includes both the Spot and forward exchange market. The Spot rate is the rate paid for delivery within two business days after the day the transaction takes place. If the rate is quoted for delivery of foreign Currency at some future date, it is called the forward rate.

Spot Market

The Spot Market is a market for immediate exchange of currencies. It is the market where transactions of buying and selling are done for immediate delivery. In real practice, cash settlement is made after two working (business) days, excluding holidays. In some cases, it takes less than two days also. For example, the trades between US dollar and Canadian dollar or Mexican peso are settled one business day after the deal, rather than two business day since Canada is in the same time zone as the United States. The price of foreign exchange in the Spot Market is referred to as the Spot rate.

A Spot transaction can be defined as an agreement to buy or sell a specified amount of a foreign Currency within two business days of the transaction.

Notes

The Spot exchange market is an over-the-counter (OTC) market. This market is a worldwide linkage of Currency traders, non-bank dealers, foreign exchange brokers who are connected to one another via a network of telephones, computer terminals and automated dealing systems. The largest vendors of screen monitors used in the Currency trading are Reuters, Bloomberg, etc.

Forward Market

A Forward Market is a market for exchange of foreign currencies at a future date. In the Forward Market, trades are made for delivery at some future date, according to an agreed upon delivery date, exchange rate and amount. The price of foreign Currency for future delivery is known as a forward rate. Thus, the forward rate, once contracted, will be valid for settlement irrespective of the actual Spot rate on the Maturity Date of the forward contract.

A forward transaction is defined as an agreement to buy or sell a specified amount of a foreign Currency any time in the future. A forward contract usually represents a contract between a large money center bank and a well-known customer having a well-defined need to hedge exposure to fluctuations in exchange rates. Forward Contracts are usually defined, so that the exchange can occur in 30, 90 or 180 days. Also, the contract can be customized to Call for the exchange of any desired quantity of Currency at any future date acceptable to both parties to the contract.

Example: Some transactions may be entered into on one day but not completed until sometime in the future. For example, a French exporter of perfume might sell perfume to a US importer with immediate delivery but not require payment for 30 days. The US importer has an obligation to pay the required francs in 30 days, so he or she may enter into a contract with a trader to deliver dollars for francs in 30 days at a forward rate – the rate today for future delivery.

Thus, the forward rate is the rate quoted by foreign exchange traders for the purchase or sale of foreign exchange in the future. There is a difference between the Spot rate and the forward rate known as the 'spread' in the Forward Market. In order to understand how Spot and forward rates are determined, we should first know how to calculate the spread between the Spot and forward rates.

Consider another example. Suppose the Spot Japanese yen of August 6, 2009, sold at $0.006879 while 90 day forward yen was priced at $0.006902. Based on these rates, the Swap rate for the 90 day forward yen was quoted as a 23 point premium (0.006902 - 0.006879). Similarly, because the 90 day British pound was quoted at $1.6745 while the Spot pound was $1.7015, the 90 day British pound sold at a 2.70 point discount.

Need for a Forward Market

The actual need for the existence of a Forward Market is not Speculation. Today, there is no clear-cut line of distinction between Hedging and speculating. However, there are a couple of characteristic of people who use the Forward Market in order to cover for time lags. The first group includes exporters and importers. As receipts and payments do not usually coincide time-wise, these people buy forward the Currency that they will have to pay and sell forward the Currency that they will receive. In this way they overcome undesirable market fluctuations and take care of future cash flows. The second group consists of people who use the Forward Market to preserve the value and nature of their assets without speculating against future trends. These operators use both the Spot and Forward Market through Swaps.

Notes

Forward Premiums and Discounts

- If the forward rate is higher than the existing Spot rate in the Forward Market, the Currency is trading at a forward premium.
- If the forward rate is lower than the existing Spot rate in the Forward Market, the Currency is trading at a forward discount.

Forward rates typically differ from Spot rates for any given Currency, that reflects a premium or discount on the Currency. Forward Premiums and discounts can be expressed as a basis point spread. If the rupee Spot rate in terms of the dollar is ₹ 49.6172/$ and the 6 month forward rate is 49.6141/$, then the rupee is selling at a 6 month forward discount of .0031 or 31 basis points. A foreign exchange rate is generally expressed by way of a whole number integer followed by 4 decimal points like 0.0007. Each of the numbers is called a basis point. Thus, if an exchange rate changes from 3.5510 to 3.5580, the Currency is said to have changed by 70 basis points.

Forward Premiums are also quoted as an annualized percentage deviation from the current Spot rate. The formula for this calculation is

$$\text{Premium/Discount} = \frac{FR - SR}{SR} \times 4 \times 100$$

Where n is the number of periods per year. For example, if the SR and FR are given for 90 days, n = 4. Multiplying by 4 converts the periodic forward premium or discount into an annualized rate. Similarly, a 6 month forward premium or discount is annualized by multiplying by 2; a one month is multiplied by n = 12.

Problem 1:

Assume the following foreign exchange quotations are given for a 90 day contract. Calculate the premium or discount on an annualized basis.

Solution:

SR= $ 0.8576/£

FR = $ 0.8500/£

$$\text{Forward Discount} = \frac{.8500 - .8576}{.8576} \times 4 \times 100 = 3.54\% \text{ p.a.}$$

Problem 2:

For the following Spot and forward quotes, calculate forward Premiums/discount on Japanese yen as (a) an annualized percentage premium.

Spot ($/*)	Forward ($/*)	Days Forward
0.009056355	0.008968508	30
0.009056355	0.008772955	90
0.009056355	0.008489201	180
0.009056355	0.007920280	360

Notes

Solution:

Forward Premium/Discount = (Forward rate – Spot rate)/Spot rate × 100

Days Forward	Discount - Annualized (%)
30	– 11.64 %
90	– 12.51%
180	– 12.52%
360	– 12.54 %

3.3.4 Bid Price, Ask Price and Spread in Foreign Exchange Quotation

Interbank quotations are given as a Bid and ask (also Referred to as Offer) price. A Bid is the price (i.e., the exchange rate) in one Currency at which a dealer will buy another Currency. An offer or ask is the price at which a dealer will sell the other Currency. Dealers generally Bid (buy) at one price and offer (sell) at a slightly higher price, making their profit from the spread, i.e., the difference between the buying and selling prices.

Generally, the Bid-ask Spreads in exchanges between leading currencies are quite small. The low spreads allow market participants to implement sophisticated risk management strategies that require numerous forex transactions. Low spreads are also a boon for Speculators and they have an important impact on trade and investment by making firms more willing to make or receive payments denominated in foreign currencies.

In trading between freely convertible currencies, the size and frequency of transactions are major factors affecting the costs and risks that underlie the Bid-ask Spreads. Transaction size obviously has a great effect on transaction cost per unit of Currency traded while the frequency of exchanges (the turnover rate) affects both transaction costs and risks. A high turnover rate obviously reduces risks since there is less time for something unforeseen to occur. Moreover, a high turnover rate spreads the fixed costs of Currency dealing over a larger volume of transactions and permits a given volume of business to be effected with a smaller inventory of foreign currencies, lowering the opportunity cost of committing funds to forex dealing.

The narrow spreads with which dealers must be satisfied when trading with leading currencies may seem to imply that, in the absence of gains from favourable exchange rate movements, the profits derived from Spot dealing are normally small. Narrow spreads can be very profitable, however, if turnover rates are high and losses from unfavourable exchange rate movements are few. If, for example, a dealer were to average a daily net gain of only 0.10 per cent of the capital invested in Spot trading for a period of one year, this would provide an annual rate of return on that capital of approximately 25 per cent.

While narrow spreads may suffice to provide attractive profits, some trading losses are inevitable. Accepting an open position in a Currency, particularly overnight, is always risky but to avoid such positions would unduly restrict bank operations and add substantial Hedging costs. To reduce the risk of loss, dealers limit the positions their traders may take in different currencies and adjust their quotations and spreads to prevent these limits from being exceeded more than temporarily. By widening their spreads when exchange rates are unusually volatile, they reduce the probability of losses, although at the cost of a possible loss of trading volume. Ever alert to exchange rate trends, traders attempt to position themselves favourably within their trading limits, comforting themselves in the knowledge that if they forecast exchange rates a little more accurately than their competitors, that should suffice to guarantee themselves substantial performance bonuses.

Notes

Caution The width of Bid-ask Spreads in forex transactions depends fundamentally on transaction costs and risks. Also, in some countries governments set Bid and ask prices for foreign exchange at levels that assume some monopoly profits for authorised dealers (who are generally government owned banks) in their own countries.

Spreads and Pips

The difference between the Bid Price and the Ask Price is called a spread. If a foreign exchange dealer were to look at the following quote: EUR/USD = 1.3700/05, the spread would be 0.0005 or 5 pips, also known as points. The pip is the smallest amount a price can move in any Currency quote.

Example: All foreign exchange dealers are interested in making a profit out of each transaction. Therefore, when a dealer in India tries to sell foreign Currency he will try to get as high a price as is possible for every unit of foreign Currency sold. But when the dealer is buying foreign Currency, his aim will be to get the most reasonable price for every unit of the foreign Currency he buys.

A dealer in New Delhi may give the following quotation:

US $1 = ₹ 43.3000-43.7300

£1 = ₹ 69.9200-71.3100

This means that the dealer will buy dollars from the exporter at US $1 = ₹ 43.3000 and sell dollars to an importer at US $1 = ₹ 43.7300. Similarly, he will buy pounds at £1 = ₹ 69.9200 but sell pounds at £1 = ₹ 71.3100. The lower rate in the quotation is the Bid (buy) rate while the higher rate is the ask (selling) rate. The difference between the banks' Bid and ask rate is the spread. The spread fluctuates in accordance with the level of stability in the market, the Currency in question and the volume of the business.

Spread can be expressed in percentage as:

Percentage spread = Ask Price – Bid Price/Ask Price x 100

= 43.7300 – 43.3000/43.7300 x 100

= .9833

Generally, in transactions among dealers, only the last two digits are quoted and the rest is understood. This is done to save time.

Example: A foreign exchange trader gives the following quotes for the Euro Spot, one month, three months and six months to a US based treasurer

$0.02368/70 4/5 8/7 14/12

Calculate the outright quotes for one, three and six months forward.

Solution:

1st Month: Since first (buy quote) is less than the second (sell quote) Currency is trading at a premium. Hence points are added to the Spot rate.

3rd Month: Since first (buy quote) is greater than the second (sell quote) Currency is trading at a discount. Hence points are deducted from the Spot rate.

Notes

6th Month: Since first (buy quote) is greater than the second (sell quote) Currency is trading at a discount. Hence points are deducted from the Spot rate.

In outright terms these quotes would be expressed as mentioned below:

Maturity	BID (Buy)	Ask (Sell)	Spread
	US $ per 1 Euro		
Spot rate	$ 0.02368	$ 0.02370	.00002
1 Month	$ 0.02372	$0.02375	.00003
3 Month	$ 0.0236	$0.02363	.00003
6 Month	$ 0.02354	$ 0.02358	.00004

Swaps

A Swap transaction (not to be confused with the Swap rate) is a double-leg deal, in which one buys Spot Currency X selling Currency Y and simultaneously sells forward Currency X buying Currency Y. Let us give an example to show the rationale of such a transaction. Assume that an American investor has a future receipt in DM. In addition, assume that he thinks that German bonds are presently a good investment. So he has dollar assets but does not hold cash in DM. In plain words, he needs DM right now and cannot wait for the future receipt DM to come. One solution would be to sell dollars and buy DM in the Spot Market. However, suppose he does not wish to block money in a foreign exchange adventure for he cannot forecast the exchange value of the future receipt. In this case he sells dollars against DM Spot getting his DM and buying his bonds. Simultaneously he buys dollars forward against DM matching the value date of the receipt. Upon expiration of the forward period, the investor cashes the receipt, pays back the DM that he owes and gets his original dollars. Hence, he has been able to overcome the time Lag problem.

Example: A trader may give the following quotations.

	Spot	1-month	3-month	6-month
₹/$	43.3125/25	10/15	20/15	15/20
₹/DM	22.9410/40	30/20	20/25	15/19

The trader will know whether the quotes represent a premium or discount on the Spot rate. This can be determined in an easy way. If the first forward quote (i.e., buying rate) is smaller than the second forward quote (i.e., the asking rate) then there is a premium. In such a case, points are added to the Spot rate. However, if the first quote is greater than the second, then it is a discount and points are subtracted from the Spot rate.

Self Assessment

Fill in the blanks:

4. A …… transaction is a double-leg deal, in which one buys Spot Currency X selling Currency Y and simultaneously sells forward Currency X buying Currency Y.
5. The difference between the Bid Price and the Ask Price is called a …… .
6. The width of Bid-ask Spreads in forex transactions depends fundamentally on transaction costs and …….
7. The …… is the smallest amount a price can move in any Currency quote.

Notes

8. In trading between freely convertible currencies, the size and frequency of transactions are major factors affecting the costs and risks that underlie the …… Spreads.
9. A …… is the price in one Currency at which a dealer will buy another Currency.
10. If the forward rate is higher than the existing Spot rate in the Forward Market, the Currency is trading at a forward …….
11. If the forward rate is lower than the existing Spot rate in the Forward Market, the Currency is trading at a forward …….
12. A Spot transaction can be defined as an agreement to buy or sell a specified amount of a foreign Currency within …… business days of the transaction.
13. The Spot exchange market is an …… market.
14. …… quotations refer to the Price of foreign Currency in terms of one unit of home Currency.
15. Direct Quotations are also known as …… quotes.

Case Study

Foreign Exchange

The Foreign Exchange Market is all set to welcome the FX portals that are sure to revolutionise the way Forex trading would take place in future. Their viability would depend on the way participants would embrace them and on the competition that would ensue. The two portals that have hit the market amid great fanfare are FX all and Atriax. By providing a sufficient range of currencies to the players to allow ease of execution and by giving access to a range of prices from different sources at all times, these portals are aiming to garner liquidity. Instead of being in a win-lose situation, a win-win scenario could emerge if both the systems would work in tandem and manage to capture a large enough portion of the growing Foreign Exchange Market pie. Forex trading itself is expected to zoom because of growing B2B transactions over internet as the investors are going global and holding greater foreign securities in their portfolios. Therefore, a more price sensitive and web-enabled Foreign Exchange Market would emerge, which in turn would result in transactions that are complex to liquidate and time consuming to settle. For the automated marketplace where information need looms large, lies the answer in the form of such portals.

The success of these platforms would depend on a host of factors such as their automatic execution, the method of providing prices to the users, the number of partnership agreements that the portal has, the number of banks it caters to, etc. The other important feature will be their pricing engines. The quality of the pricing engine, its ability to handle huge volume of transactions and the quality of transaction services, such as ease of settlement, pre-trade information etc. will all determine their fate.

However, from the user's point, the problem that emerges is would the cost of settling with multiple counter parties (as opposed to just using one or two lead banks for FX trading) come in the way of using a multiple price service? But the customers have been working on integration with a single bank for long, these FX platforms should be attractive, as they will only have to make one investment to access multitude of dealers.

However, for such electronic trading to gather momentum, users need to shift from telephone-based to screen-based trading which would be a tough task. Then they are to be

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persuaded to move to a single-dealer channel from the multi-dealer channel, which would not be very difficult once the initial step is taken.

When the traditional and clerical jobs are automated by these electronic exchanges, sales desk officers/client relationship managers would be left with more time to spend on value added activities – delivering advice and information. Hence, these platforms could go a long way in lowering cost and improving service quality.

Question

Do you think that a web-enabled Foreign Exchange Market would revolutionise the forex trading practices in the future? Elucidate with examples.

Source: *International Financial Management*, Madhu Vij, Excel Books.

3.4 Summary

- Foreign exchange is essentially about exchanging one Currency for another. The complexity arises from three factors. Firstly, what is the foreign exchange exposure, secondly, what will be the rate of exchange, and thirdly, when does the actual exchange occur.
- Foreign exchange exposures arise from many different activities. A traveler going to visit another country has the risk that if that country's Currency appreciates against their own, their trip will be more expensive.
- An exporter who sells his product in foreign Currency has the risk that if the value of that foreign Currency falls then the revenues in the exporter's home Currency will be lower.
- An importer who buys goods priced in foreign Currency has the risk that the foreign Currency will appreciate thereby making the local Currency cost greater than expected.
- The most, basic tools in the FX market are Spot rates and forward rates. In any FX contract there are a number of variable that need to be agreed upon.
- A deal can be performed with a maturity of two business days ahead – a deal done on this basis is called a Spot deal.
- In a Spot transaction the Currency that is bought will be receivable in two days whilst the Currency that is sold will be payable in two days. This applies to all major currencies. However most market participants want to exchange the currencies at a time other than two days in advance but would like to know the rate of exchange now. This rate is referred to as the forward rate.
- Inter bank quotations are given a Bid and ask (offer) price. A Bid is the price in one Currency at which a dealer will buy another Currency. An offer or ask is the price at which a dealer will sell the other Currency. As the Bid-ask spread between leading currencies is quite small, it allows market participants to implement sophisticated risk management strategies.

3.5 Keywords

Arbitrage: Arbitrage is the practice of taking advantage of a price differential between two or more markets.

Cross Rate: The exchange rate between any two non-dollar currencies is referred to as a cross rate.

Cross Rate of Exchange: An exchange rate between two currencies that is derived from the exchange rates of those currencies with a third Currency.

Notes

Forward Rate: The forward rate is the rate quoted by foreign exchange traders for the purchase or sale of foreign exchange in the future.

Forward Transaction: Forward transaction is defined as an agreement to buy or sell a specified amount of a foreign Currency any time in the future.

Indirect Quotations: Indirect quotations refer to the Price of foreign Currency in terms of one unit of home Currency.

Pip: Pip is the smallest amount a price can move in any Currency quote.

Spot Rate: Spot rate is the theoretical yield on a zero-coupon Treasury.

Spot Transaction: Spot transaction can be defined as an agreement to buy or sell a specified amount of a foreign Currency within two business days of the transaction.

Spread: The difference between the Bid Price and the Ask Price.

3.6 Review Questions

1. Why do companies involved in international trade have to hedge their foreign exchange exposure?
2. Should an exporter use the Spot rate or forward rate for quotation?
3. Is devaluation good for exports and imports? Why is the impact of devaluation usually not immediate?
4. What problems do you think you would face as a business trying to operate in two foreign exchange markets?
5. What risks confront dealers in the Foreign Exchange Market? How can they cope with those risks?
6. Assume that the Spot rate of the British pound is $1.70. The expected Spot rate one year from now is assumed to be $1.68. What percentage depreciation does this reflect?
7. What are foreign exchange markets? What is their most important function? How is this function performed? What are the four different levels of participants in foreign exchange markets? What are the other functions of foreign exchange markets?
8. Differentiate between Speculation and Hedging. Also, discuss the appropriate role for each in the equity market.
9. The Spot rate for the Deutschmark in New York is $0.41.
   (a) What should the Spot price for the US dollar be in Frankfurt?
   (b) Should the dollar be quoted at DM 2.50 in Frankfurt, how would the market react?
10. Who is authorised to exchange foreign Currency?

Answers: Self Assessment

1.	False	2.	True
3.	True	4.	Swap
5.	Spread	6.	Risks
7.	Pip	8.	Bid-ask
9.	Bid	10.	Premium

Notes

11. Discount
12. Two
13. Over-the-counter (OTC)
14. Indirect
15. American

3.7 Further Readings

Books

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http://economics.about.com/cs/money/1/aa022703a.htm

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http://www.econlib.org/library/Enc/ForeignExchange.html

Unit 4: Eurocurrency Markets

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Objectives

After studying this unit, you will be able to:

- Explain the characteristics of Eurocurrency markets
- Discuss the Euro Currency Interest rates
- Elaborate the International Equity Market, Bonds Market and Euro Bond Market
- Describe the External Commercial Borrowings
- Discuss the Euro Debt market

Introduction

A Eurocurrency is any freely convertible currency deposited in a bank outside its country of origin. Pounds which are deposited in US become eurosterling, dollars deposited in London become Eurodollars. These deposits can be placed in a foreign bank or in a foreign branch of a domestic US bank. Any convertible currency can exist in "Euro" e.g. we can have Eurosterlings, Euroyen, Euromarks, Eurodollars and so on. The Eurocurrency market consists of those banks which accept deposits and make loans in foreign currencies. The eurocurrency market allows for

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more convenient and flexible borrowing which improves the international flow of capital for the purpose of trade between countries and companies. For example a company in UK borrowing US dollars from a bank in France is using the eurocurrency market. Banks in which Eurocurrencies are deposited are called Eurobanks. Thus Eurobanks are major world banks that conduct a Eurocurrency business in addition to all other banking functions. On the other hand, a Eurobond is a bond sold outside the country in whose currency it is denominated. In the Eurobond market, these Eurobonds are issued directly by the final borrowers, whereas the Eurocurrency market enables investors to hold short-term claims on commercial banks, which then act as intermediaries to transform these deposits into long-term claims on final borrowers.

The dominant Eurocurrency is the US dollar as the US dollar is widely used by many foreign countries as a medium for international trade However, the importance of the Eurodollar has decreased over a period of time. Also, with the weakening of the dollar in the latter parts of both the 1970s/80s, other currencies – particularly the Deutsch-mark and the Swiss franc – have increased in importance. Thus a Eurocurrecny market serves two important purposes. First, it is a convenient and efficient money market device for holding excess corporate liquidity and Second, it is a major source of short-term bank loans to finance corporate working capital.

4.1 Characteristics of the Eurocurrency Market

The various characteristics of the Eurocurrency market are:

1. It is a large international money market relatively free from government regulation and interference, i.e., the market is essentially unregulated.
2. The deposits in the Eurocurrency market are primarily for short-term. This sometimes leads to problems about managing risk, since most Eurocurrency loans are for longer periods of times.
3. Transaction, in this market are generally very large with government, public sector organisations tending to borrow most of the funds. This makes the market a wholesale rather than a retail market. Also, approximately 80% of the Eurodollar market is interbank, which means that the transactions take place between banks.
4. The Eurocurrency market exists for savings and time deposits rather than demand deposits.
5. The Eurocurrency market is mainly a Eurodollar market. Generally, the Eurocurrency borrowing rate depends on the creditworthiness of the customer and is large enough to cover various costs as also build reserves against possible losses. Traditionally, loans are made at a certain percentage above the London InterBank Offered Rate (LIBOR), which is the interest rate banks charge one another on loans of Eurocurrencies. Most loans are made on variable rate terms and the rate fixing period could be one month, three months or six months. Because of the variable nature of the interest rates, the maturities can extend into the future.

The Eurocurrency market has both short-term and medium-term characteristics. Short-term Eurocurrency borrowings have a maturity of less than one year. Borrowing at maturities exceeding one year is also feasible and is known as Euro credit. A Euro credit consists of loans that mature in one to five years. These Euro credits may be in the form of loans, lines of credit or medium and long-term credit including syndication. Syndication occurs when several banks pool their resources to extend a large loan to a borrower so as to spread the risk.

Another special feature of the Eurocurrency market is the difference in interest rates as compared with domestic markets. Eurocurrency loans generally carry a lower rate of interest than the rates in the domestic markets.

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Notes Eurocurrency deposits generally tend to yield more than domestic deposits because of large transactions and the absence of controls and their attendant costs.

4.1.1 Significance

The Eurocurrency market plays a key role in the capital investment decisions of many firms since it is a funding source for corporate borrowing. In addition, since this market also rivals domestic financial markets as a deposit alternative, it absorbs large amounts of savings from lenders (i.e., depositors) in many countries. In fact, the Eurocurrency market complements the domestic financial markets, giving greater access to borrowing and lending to financial market participants in each country where it is permitted to function. Overall, the Eurocurrency market is now the world's single most important market for international financial intermediation.

The Eurocurrency market is totally a creation of the regulations placed by national governments on bankings. If the governments of various countries allowed banks to function without the stipulation of reserve requirements, capital controls, interest rate restrictions and tax, the Eurocurrency market would involve only the transnational deposits and loans made in each country's banking system. Instead, the governments, in order to achieve the various benefits of monetary policy, heavily regulate the financial markets. Thus, in order to overcome many of the limitations placed on domestic financial markets, the Eurocurrency market provides a very important outlet for flow of funds. And since most of the governments have found the impact of the Eurocurrency market on their firms and banks to be favourable, they have allowed these markets to operate.

Thus, Eurocurrency markets serve two valuable purposes: (1) Eurocurrency market is a major source of short-term bank loans to help meet the corporate's working capital requirements including the financing of imports and exports; (2) Eurocurrency deposits are an efficient and convenient money market device for holding excess corporate liquidity.

For a Eurocurrency market to exist three conditions must be met. First, national governments must allow foreign currency deposits to be made; second the country whose currency is being used must allow foreign entities to own and exchange deposits in that currency; third, there must be a significant reason, such as low cost or ease of use that motivates individuals to use this market and not the domestic one. The phenomenal growth of the Eurocurrency market testifies that it has met these conditions for the past three decades now.

Many countries allow foreign currency deposits to be held in their banking systems. While some countries impose restrictions like interest rate limits, capital controls, etc., on both the foreign currency deposit as well as on local currency deposit, other countries, specially most of the developed countries, do not impose restrictions on the foreign currency deposits. These countries generally tend to be the Euromarket centres as participants find them more acceptable due to favourable interest rates, greater availability of funds and easy access for moving funds internationally.

The currencies which have become popular as Eurocurrencies and tend to be widely used include the US dollar, the British pound, the French franc, the German mark and a few others. The governments of countries whose currencies are being widely used have generally consented to allow foreign banks, companies and individuals to hold and use deposits denominated in those currencies.

Notes

Self Assessment

Fill in the blanks:

1. A ..... is any freely convertible currency deposited in a bank outside its country of origin.
2. The Eurocurrency market consists of those banks which accept deposits and make loans in ..... currencies.
3. A Euro credit consists of loans that mature in one to ..... years.
4. Eurocurrency market is a major source of short-term bank loans to help meet the corporate's ..... capital requirements.

4.2 Eurocurrency Interest Rates

The base interest rate paid on deposits among banks in the Eurocurrency market is called LIBOR, the London Interbank Offered Rate. (Outside London, which is the centre of the entire Euromarket, the base rate on deposits is generally slightly higher.) LIBOR is determined by the supply and demand for funds in the Euromarket for each currency, because participating banks could default (and, infrequently, do default) on their obligations and the rate paid for Eurodollar deposits in addition to the spread over LIBOR in the Euromarket. This also helps reduce the cost of using the Euromarket for borrowers. The total cost of borrowing in the Euromarket for a prime US corporation historically was marginally below the domestic US prime rate. Because of competition among lenders in both markets, prime borrowers have been able to obtain the same rate in both markets since the early 1980s.

Interest rates on other Eurocurrencies generally follow the same pattern, though when capital controls exist in a particular country (e.g., France), borrowing rates may be higher in the Euromarket (which is not restricted) than in the domestic market.

4.2.1 Instruments and Rates of Eurocurrency Markets

The most important characteristic of the Eurocurrency market is that loans are made on a floating rate basis. Interest rates on loans to governments and their agencies, corporations, and non-prime banks are set at a fixed margin above LIBOR for the given period and the currency chosen. At the end of each period, the interest for the next period is calculated at the same fixed margin over the new LIBOR.

The margin, or spread between the lending bank's cost of funds and the interest charged from the borrower, varies a good deal among borrowers and is based on the borrower's perceived riskiness. Typically, such spreads have ranged from slightly below 0.5% to over 3%, with the median being somewhere between 1% and 2%.

The maturity of a loan can vary from approximately three to ten years. Lenders in this market are almost exclusively banks. In any single loan, there will normally be a number of participating banks that form a syndicate. The bank originating the loan will usually manage the syndicate. This bank, in turn, may invite one or two other banks to comanage the loan.

The managers charge the borrower a once-and-for-all fee of 0.25% to 1% of the loan value, depending on the size and type of the loan.

Eurocurrency deposits are held predominantly in the form of fixed rate time deposits with maturities ranging from overnight to several years. Most of the funds, however, are held in the

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one month to six months maturity range. The balance of these deposits is accounted for by negotiable Certificates of Deposits (CDs).

Eurocurrency CDs are issued in two forms: These are Tap CDs and Tranche CDs. The former are issued in relatively large denominations (commonly from $250,000 to $5 million) and for maturities of less than one year, whenever banks need to "tap" the market for funds. Tranche CDs are issued in large aggregate amounts (typically $10 million to $50 million), but are offered to investors in small certificates (typically $10,000). The volatility of interest rates since 1979 has led to the use of Eurocurrency Floating Rate CDs (FRCDs) and Eurocurrency Floating Rate Notes (FRNs). Both are negotiable bearer instruments with rates reset at every three to six months, thus protecting investors against a decline in the principal value of the paper caused by rise in interest rates.

4.2.2 Growth of the Eurodollar Market

The origin of the Eurodollar market is rather obscure. However, it is generally agreed, that it originated in the early 1950s by the desire of the Soviet Union and Eastern European countries to place their dollar holdings in European banks to avoid the risk of such balances being blocked if deposited in US banks.

Basically the Eurocurrency market has thrived on one basic reason, i.e., government regulation. By operating in Eurocurrencies, banks, suppliers of funds are able to avoid certain regulatory costs that would otherwise be imposed.

Briefly, the fast growth of the Eurodollar market in the 1965–1980 period has been attributed mainly to the following four major factors:

1. Large deficits in the US balance of payments, particularly during the 1960s, which resulted in the accumulation of substantial dollars held by foreign financial institutions and individuals.
2. The restrictive environment which prevailed in the United States during the 1963–1974 period to stem capital outflows. These restrictions, which took the form of both voluntary and mandatory controls, encouraged US and foreign multinational companies to borrow dollars abroad.
3. The massive balance of payments surpluses realised by OPEC countries due to sharp increases in oil prices in 1973–1974 and again in 1978. A good proportion of these "petrodollars" was deposited in financial institutions outside the United States.
4. The efficiency and lower cost base of the Eurodollar market. Being a wholesale funds market, operating free of restrictions at a substantially lower cost than its counterpart in the United States, it has been able to attract dollar deposits by offering higher interest rates, as well as making dollar loans available to borrowers at lower interest rates.

4.2.3 Example of Euro-dollar Creation

U.S dollar denominated time deposits held in foreign bank accounts is known as Euro dollars. Eurodollars can be held in any foreign bank in the world and they have no connection or correlation to the Euro currency. Eurodollars can be created in two ways – when a foreign bank buy U.S. dollars in the forex market and lend these domestically to customers or when U.S. dollar balances, which reside in a U.S. bank, are placed on deposit in a foreign bank. Foreign banks holding these dollars are not subject to the rules and regulations imposed by the federal reserve bank in the United States, reducing regulatory and other costs and improving profitability margins for banks.

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Eurodollar Creation

The creation of the Eurodollar can be illustrated using the traditional 'T' accounts to show the sequence of transaction.

The following four transactions are given to you:

Transaction (1)

XYZ Co. (Netherlands) exported to ABC, Inc. (US) goods valued at $10,00,000. The importer paid by a cheque drawn on Citibank (N Y). XYZ Co. asked its bank (Algemene bank of the Netherlands) to credit its account in Dutch guilders with the proceeds of the transaction. (The exchange rate on the value date of the transaction S0F1/$ is 2.7715.)

Transaction (2)

Algemene bank places the $1,000,000 it has in Citibank (NY) as a time deposit in Shanghai-Hong Kong Bank (Hong Kong).

Transaction (3)

Shanghai-Hong Kong Bank makes a loan of $9,00,000 to Nestle Co., (Netherlands). Nestle Co. deposits the cheque in its account with the National Bank of the Netherland and asks its bank to credit its account with the equivalent in Dutch guilders. (The exchange rate on the value date of the transaction is S0F1/$ = 2.7750.)

Transaction (4)

The National Bank of Netherlands makes a loan of $75,00,000 to Nova Industries (Denmark). Nova Industries uses the loan to settle an import transaction with Bristol Myers (NY) Bristol Myers maintains its accounts with Chase Manhattan Bank (N Y).

Solution:

a. *Transaction (1)*

Citibank (NY)	Algemene Bank (Netherlands)	
1. Deposits of ABC, Inc. - $1,000,000	Account with Citibank (NY) +F12,771,500 (Equivalent to $1,000,000)	(1) Deposits of XYZ Co. + F127,71,500
1. Deposits of Algemene Bank + $1,000,000		

Transaction (2)

Citibank (NY)	Algemene Bank (Netherlands)
2. Deposits of Algemene Bank - $1,000,000	(2) Account with Citibank (NY) - $1,000,000
2. Deposits of Shanghai - Hong Kong Bank + $1,000,000	(2) TD with Shanghai, H. K. Bank + $1,000,000
Shanghai-Hong Kong Bank	
2. Account with Citibank (NY) + $1,000,000	(2) TD of Algemene Bank + $1,000,000

Transaction (3)

Citibank (NY)	Shanghai-Hong Kong Bank
3. Deposits of Shanghai - Hong Kong Bank - $900,000	(3) Account with Citibank (NY) - $900,000
3. Deposits of National Bank of Netherlands + $900,000	(3) Loan to Nestle Co. + $900,000

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National Bank of Netherlands	
3. Account with Citibank (NY) + $900,000	(3) Deposit of Nestle Co. + FL $2,497,500 (Equivalent to $900,000)
Transaction (4)	
Citibank (NY)	**National Bank of Netherlands**
4. Deposits of Natl. Bank of Netherlands - $750,000	(4) Account with Citibank (NY) - $750,000
4. Deposits of Chase Manhattan Bank (NY) + $750,000	(4) Loan to Nova Industries + $750,000
Chase Manhattan Bank (NY)	
4. Account with Citibank (NY) + $750,000	(4) Deposits of Bristol Myers + $750,000

b. Total amount of Eurodollar deposits created is $1,000,000 (time deposit of Algemene Bank with Shanghai-Hong Kong Bank denominated in US dollars).

c. The value of the Eurodollar deposit multiplier here is unity.

Self Assessment

Fill in the blanks:

5. The base interest rate paid on deposits among banks in the Eurocurrency market is called …….

6. The most important characteristic of the Eurocurrency market is that loans are made on a …… rate basis.

7. Eurocurrency deposits are held predominantly in the form of …… rate time deposits with maturities ranging from overnight to several years.

4.3 International Equity Market, Bonds Market and Euro Bond Market

These have been explained below:

International Equity Market

This constitutes the equity market on the international scene. The International Equity Market can be divided into two categories:

1. ***Foreign Equity:*** If the equity issue is made in a particular domestic market (and in the domestic currency of that market), it is known as a 'Foreign Equity Issue'. For example, an Indian company accessing exclusively the US market through an equity issue would be called a foreign equity issue. The instrument available for the above case is called American Depository Receipt (ADR). If a non-European country raises funds exclusively from European countries through International/European Depository Receipts (IDRs/EDRs), it is also a foreign equity issue.

2. ***Euro Equity:*** If a company raises funds using equity route through instruments like Global Depository Receipts (GDRs) or Superstock Equity in more than one foreign market except the domestic market of the issuing company and denominated in a currency other than that of the issuer's home country, it is known as 'Euro Equity Issue' or 'Global Equity Issue'.

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International Bonds Market

This constitutes the long-term debt market in the international scene. Many countries have very active bond markets available to domestic and foreign investors. The US market in the mid 1980s was very attractive for the foreign investors given the relative political and economic stability, high real rates of interest and the government's desire to finance its budget deficit with borrowings. The International Bond Market can be broadly classified into two categories: Foreign bonds and Euro bonds.

Foreign Bonds: These are the bonds floated in a particular domestic capital market (and in the domestic currency of that market) by non-resident entities. The bonds are generally named on the basis of the capital markets in which they are floated.

Example: An example of an Indian company going in for a foreign bond (namely Yankee bond) is that of Reliance. The $200 million Yankee bond issue of RIL was split into two issues of $100 million each. One issue had 20 years maturity period while the other had a 30 years maturity with a put option after 12 years. These were priced just at the end of the indicated band of 350–370 basis points and generated enough demand to raise $200 million. This offering was assigned Baa3 rating by Moody's and a BB+ by Standard and Poor. Further, RIL succeeded in even selling 50 year bonds with a put option in the 13th year at 350 basis points over treasuries.

Dollar denominated bonds issued in the US domestic markets by non-US companies are known as Yankee Bonds. Yen denominated bonds issued in Japanese domestic market by non-Japanese companies are known as Samurai Bonds. Pound denominated bonds issued in the UK are called Bulldog Bonds.

Caution The procedure for floating foreign bonds is similar to that of Euro bonds. However, the complexities of individual market mechanisms and their respective characteristics need to be understood.

Euro Bond Market

Euro bonds are unsecured debt securities issued and sold in markets outside the home country of the issuer (borrower) and denominated in a currency different from that of the home country of the issuer. Euro bonds are underwritten and sold in more than one market simultaneously usually through international syndicates and are purchased by an international investing public that extends far beyond the confines of the countries of issue. For example, a dollar denominated bond issued in the UK is a Euro (dollar) bond; similarly, a Yen denominated bond issued in the US is a Euro (Yen) bond.

Occasionally, Euro bond issues may provide currency options, which enable the creditor to demand repayment in one of several currencies and thereby reduce the exchange risk inherent in single currency foreign bonds. More recently, however, interest and principal on the bonds are payable in US dollars. Over the last several years, the Euro bond market has become a market for dollar denominated obligations of foreign as well as US borrowers that are purchased by non-US investors.

In an effort to broaden investor appeal, corporate borrowers have increasingly shifted from straight debt issues to bonds that are convertible into common stock. The option of conversion rests with the holder of the convertible issue. For the non-resident investor, one of the main attractions of a convertible issue is that it usually offers a large current return than the dividend of the underlying stock.

Notes

In the past decade, the Euro bond market has grown explosively, due to a variety of reasons – primarily the deregulation of markets. The weakening of the dollar in 1985 also caused a shift out of dollars toward Euro-Yen and Euro-Deutschmark issues. The control of inflation in the industrial countries also has resulted in a big demand for financial assets, allowing companies to issue bonds in unprecedented quantities and in a variety of currencies. The major benefits of the Euro bond market are that it is relatively unregulated, its income is essentially untaxed, and there appears to be greater flexibility in making issues than is the case in purely national markets. In addition, it is an important step towards a fully integrated European capital market. The Yen is potentially the largest source of funds for the Euro bond market, because of the huge trade surpluses that Japan has enjoyed in recent years.

Self Assessment

Fill in the blanks:

8. Euro …… are unsecured debt securities issued and sold in markets outside the home country of the issuer.
9. If a company raises funds using equity route through instruments like Global Depository Receipts (GDRs) or Superstock Equity in more than one foreign market except the domestic market of the issuing company and denominated in a currency other than that of the issuer's home country, it is known as …….
10. If the equity issue is made in a particular domestic, it is known as a 'Foreign …… Issue'.

4.4 External Commercial Borrowings

The underdeveloped and the developing economies require external assistance due to the shortage of capital within the country. The savings generated by the citizens and tax revenues collected by the government are too meagre compared to the funds requirement for the development of the infrastructure sector, the industry and various other developmental activities. The governments of these economies, therefore, generally encourage the inflow of external funds into the country. The reasons why they follow such a policy are:

1. The scarcity of domestic capital resources hinders a high rate of capital formation.
2. The rate of savings is low because the income levels are at a low level and whatever small savings are possible, they are very difficult to mobilise.
3. Scarcity of foreign exchange also plays an important role as most of the developing economies are characterized by an adverse balance of payment.
4. Generally the country's exports are not sufficient to cover the large imports of machinery, components, spare parts, materials and related services.
5. Funding of infrastructure sector by the government alone cannot go on forever on borrowed money because the monetary needs of the infrastructure sector in a developing economy are massive and if the government were to even attempt to borrow it all, then the interest and deficits would rocket with the usual dizzying symptoms on the economy.

The governments, therefore, allow the corporate sector to access funds from abroad in the form of External Commercial Borrowings (ECBs). ECBs are defined to include (1) commercial bank loans, (2) buyers' credit, (3) suppliers' credit, (4) securitised instruments such as Floating Rate Notes and Fixed Rate bonds, (5) credit from official sector, e.g., window of multilateral financial institutions such as International Finance Corporation (Washington), ADB, AFIC, and (6) various forms of Euro bonds and syndicated loans.

Notes

4.4.1 Sources of External Commercial Borrowings

ECBs may be raised from any internationally recognised source such as banks, export credit agencies, suppliers of equipment, foreign collaborators, foreign equity holders, international capital markets, etc.

1. ***Purpose of External Commercial Borrowings:*** ECBs are supposed to be utilised for meeting foreign exchange cost of capital goods and services and also for project related rupee expenditure up to certain limits. The end use to which funds can be put can be categorised into:
   - Forex cost of capital goods and services.
   - For project related rupee expenditure in infrastructure projects in power, telecom and railways. For telecom sector license fee payments is approved use of ECB.
   - For project related rupee expenditure subject to terms and conditions specified in schemes.
   - Corporate borrowers able to raise long-term resources with an average maturity of 10 years and 20 years will be allowed to use the ECB proceeds up to USD 100 million and USD 200 million respectively without any end use restrictions, i.e., for general corporate objectives.
   - Not to be used in investment in stock markets and speculation in real estate.
2. ***Approvals Required:*** The following approvals are required before a corporate can raise an ECB:
   - For ECB of minimum maturity of less than 3 years, approval from RBI alone is required.
   - For ECB of minimum maturity of 3 years and above, sanction is required from the ECB Division, Department of Economic Affairs, Ministry of Finance (MoF) and thereafter approval is to be obtained from RBI.
   - An executed copy of the loan agreement is to be submitted to MoF before obtaining the clearance from RBI, within three months from the date of obtainment of approval from MoF.
3. ***Maturity Period for ECBs:*** The guidelines issued by the Ministry of Finance specify the following minimum average maturities for the ECBs realised by the Indian corporates:
   - Minimum average maturity of three years for ECBs up to US$ 15 million equivalent;
   - Minimum average maturity of seven years for ECBs greater than US$ 15 million equivalent;
   - The 100% Export Oriented Units (EOUs) are permitted ECB at a minimum average maturity of three years even for amounts exceeding USD 15 million equivalent.

Did u know? Indian Development Financial Institutions (DFIs) and corporates engaged in infrastructure projects in telecommunications and Oil Exploration and Development are permitted to raise ECB at a minimum average maturity of five years even for borrowings exceeding USD 15 million equivalent.

However, considering the fact that very few banks are ready to lock themselves up for commercial borrowings, those too for India, at average maturities exceeding seven years and even if they do,

the cost of such borrowings is extremely high, accessing ECB for amounts beyond USD 15 million remains a daunting task. Exporters and 100 per cent EOUs are anyway able to obtain foreign currency funds by way of FCNR(B) loans. Hence, they may not be very enthusiastic about raising short-term funds under the ECB route.

Task Do you expect the Eurodollar to exist 10 years from now? Why or why not?

Self Assessment

Fill in the blanks:

11. ECBs are supposed to be utilised for meeting foreign exchange ..... goods and services and also for project related rupee expenditure up to certain limits.
12. For ECB of minimum maturity of less than 3 years, approval from ..... alone is required.
13. The 100% Export Oriented Units (EOUs) are permitted ECB at a minimum average maturity of ..... years even for amounts exceeding USD 15 million equivalent.

Caselet

External Commercial Borrowing

India's $18 mn ECB to Fund Expenditure Projects

IAC Co. Ltd. has tied up a Eurodollar loan worth $18 million (nearly ₹ 63 crores) to fund its project related rupee expenditure and capital expenditure projects at its various plants. The syndicated external commercial borrowing (ECB) has been arranged through Citibank and has a structure with an average tenor of four years and a door-to-door-tenor of five years. The consortium of banks includes Sakura Bank in Hong Kong, Banque Nationale de Paris Intercontinental, the Fuji Bank in Singapore, Banca Monte dei Paschi di Siena in London, the Long-term Credit Bank of Japan in Singapore and the SBI-European Bank. IAC Ltd will use $15 million as project related rupee expenditure under the scheme for exporters, and $3 million to finance capital expenditure. According to the recent liberalised norms, exporters are permitted ECBs up to twice the average amount of annual exports during the previous three years subject to a maximum of $100 million without end-use restrictions. The minimum average maturity for three years to raise $15 million worked out to the advantage of Indal. In 1994-95, the aluminium major had raised $11 million to expand and upgrade its sheet and foil plants. For this, the company had bought an interest rate cover. For the latest loan, however, IAC Ltd has not taken an interest cover as it was secured on a Fixed Rate Agreement (FRA). Foreign debt formed a major part – almost 68 per cent – of the unsecured loans for the last fiscal, which have more than doubled over the previous year to ₹ 128.4 crore.

IAC Co's Fundamentals

Due to its strong fundamentals and a high credit rating, IAC was in a position to tap borrowings from overseas funding agencies. The company was able to hold its debt to 38 per cent of the capital employed. Leveraging on its high exports, the company accessed substantial foreign currency funds and contained average borrowing cost to just over

Contd...

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14 per cent. Moreover, with growing exports, IAC has a natural hedge. Although 1996-97 was a difficult year for IAC, total exports by its crore business increased by 15 per cent. Export of semi-fabricated products increased by 10 per cent and alumina exports were up by 20 per cent. This was notwithstanding a disquieting trend with import duties on aluminium foils, sheets and extrusions moving further southwards to 20 per cent from the already lowered 25 per cent.

Utilisation of Funds

The Indian associate of the Canadian major company has also kept its options open for raising more loans through this route in the current year. The loans would be raised for the continuous caster project for supply of good quality cast coils to the Belur sheet plant, which is likely to be completed by the end of the current year. With the aim of reducing the interest burden, IAC is also funding its working capital from FCNR(B) borrowings and commercial paper. IAC Ltd has mopped up ₹ 35 crores through commercial paper in the current fiscal. Commercial paper rates are hovering at around 12 per cent. The aluminium major has used the foreign debt to complete its aluminium scrap recycling project at Taloja in Maharashtra. This unit has a capacity of 25,000 tonnes per annum. The installation of a twin-head poly-extruder at Kalwa has helped the company produce high quality laminated foil and webstock. With enhanced conversion facilities, the value added laminated foil would surpass the production of plain foil at Kalwa. The debt was also used for installation of an electronic engraver helping the company to position itself as one of the most modern converting units in the Indian Ocean Rim region. The capital expenditure exercise also took into account infotech package being installed by Oracle. This included a canned software package which would help link databases at Indal's 10 offices and 13 plants. In short, it would improve Indal's supply chain and financial management. The capital expenditure during the last fiscal was ₹ 126 crore, almost 19 per cent more than the previous year. Sources said projects worth more than ₹ 61 crore were completed and commissioned.

Source: *International Financial Management*, Madhu Vij, Excel Books.

4.5 Euro Debt

External Commercial Borrowings (ECBs) are defined to include:

1. Commercial bank loans.
2. Buyer's credit.
3. Supplier's credit.
4. Credit from official export credit agencies.
5. Securitised instruments such as fixed rate notes and floating rate bonds.
6. Commercial borrowings from the private sector window of multilateral financial institutions such as IFC, ADB, AFIC, CDC, etc.
7. Various forms of Euro bonds and Syndicated loans.

Here we will only analyse the long-term sources of finance and hence will concentrate only on the last mode.

4.5.1 Foreign Currency Convertible Bonds (FCCBs)

The instrument floated by the Indian companies are commonly referred to as Foreign Currency Convertible Bonds (FCCBs). FCCBs are basically equity linked debt securities, which are

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converted to equity or Depository Receipts after a specific period. In India, conversion of a Fully Convertible Debenture of a Partially Convertible Debenture is forced, since the conversion date and price are fixed in advance. However, in case of FCCBs, the holder has the option of converting them into equity (normally at a predetermined exchange rate), or retaining the bond.

Because of this facility, FCCBs carry a lower rate of interest than the rate on any other similar non-convertible debt instrument. FCCBs are freely tradable and the issuer has no control over the transfer mechanism, since, like GDRs, they are bearer securities, with no registration of owners. However, Convertible Bonds issuance is concentrated only in a few currencies.

Of the major currencies, the US dollar accounts for more than half the issuance of FCCBs. The British pound sterling, French franc and Japanese yen together account for around a quarter of the current outstandings in global markets, but they are primarily for domestic markets and attract very little international interest. The Swiss franc is an important niche market, accounting for more than 10 per cent of the outstanding issuance and offers low coupon structures, especially for relatively small amounts and for Asian issuers.

Convertibles are more beneficial for the issuer than a GDR because of the following characteristics:

(i) They have a lower coupon than straight debt.

(ii) They provide a broader investor base, i.e., both, those who invest in debt as well as in equity.

(iii) They allow a higher premium to the issuer than a GDR.

(iv) Dilution of equity is not immediate, but deferred.

The disadvantages of convertibles when compared to GDRs are the need for debt servicing in foreign currency and the exchange risks associated with it and to leverage before conversion.

4.5.2 Pure Euro Debt

Pure Euro Debt is generally raised through Syndicated Loans or Private Placements. Very few Indian companies have issued Euro debt to the general public. The reasons for this are the higher cost of raising funds (when compared to Syndicated Loans or Private Placement) as well as servicing the debt and the exchange risk associated with the payments. Also, very few investors would be interested in investing in an Indian company, which would be graded very low, in spite of the higher coupon offered to them.

In Syndicated Loans, the company which wishes to raise funds, appoints a Lead Manager and it is the responsibility of the Lead Manager to form a syndicate of banks and/or other Financial Institutions (FIs) who combine to raise the amount needed by the company.

For instance, The Tata Iron and Steel Company (TISCO) raised a loan of $150 million recently in March, 1997, wherein the Lead Managers were State Bank of India, ANZ Grindlays Bank and HSBC Markets, who, among themselves contributed only $6.5 million and the rest was contributed by a syndicate of 21 other banks, which was formed by the managers.

Syndicated Loans are usually given at a floating rate of interest, where the 3 or 6 months LIBOR is taken as the benchmark and the interest is fixed at certain basis points above this rate. The tenors can extend up to 10 years and repayment is fixed in any profile bullet or amortising. No listing is required. The loan may be secured or unsecured. These loans are typically given by banks and are not traded in the capital markets.

Notes

The various types of bonds for the general public, which have evolved over time, are listed below:

(i) ***Deep Discount Convertibles:*** These are also known as Zero Coupon Convertible Bonds. They are issued at a discount to the par value and mature at par value. Thus, they have no or very low interest payments.

(ii) ***Bunny Bonds:*** These bonds permit investors to reinvest their interest income into more such bonds with the same terms and conditions, thus compounding their earnings.

(iii) ***Bulldog Bonds:*** These are denominated in pounds sterling for UK investors by a non-UK entity.

(iv) ***Yankee Bonds:*** These are dollar denominated issues, aimed at US investors, floated by a non-US entity.

(v) ***Samurai Bonds:*** These are long-term domestic yen debt issues targeted at Japanese investors by non-Japanese companies.

(vi) ***Dragon Bonds:*** These are issued in dollars, yen and other currencies, to lure Asian investors.

Apart from these, issuers can make their offerings more attractive through additional sweeteners in the form of equity warrants, options, etc. Each new combination can be termed as a new instrument.

Notes Indian companies are, however, not permitted to issue warrants along with their Euro issues.

Characteristics of Euro Debt

The pricing of ECB loans is like the U-curve. For small loans (up to $3 million) the interest rates are high. This is because of the high proportion of fixed costs towards clearing the loan proposal. As the size of the loan increases to $15 to $18 million, the interest rates decline. In case of big loans, they rise again due to the higher risk perception of the lender and larger syndication cost. So, in case of small loans, the interest is fixed at about 50–100 basis points above LIBOR, while for medium-size loans, they fall to 35–45 basis points above LIBOR, and rise again for large loans to more than 100 basis points above LIBOR.

Self Assessment

Fill in the blanks:

14. …… are basically equity linked debt securities, which are converted to equity or Depository Receipts after a specific period.

15. …… are issued at a discount to the par value and mature at par value. Thus, they have no or very low interest payments.

Notes

Case Study

Euro Currency Market

Kelly Finance Company wants to borrow $200 million or the foreign currency equivalent for 5 years. The following alternatives are available:

(a) ***Borrow in Euros:*** Borrow in Euros at 8.5% p.a. with bonds sold at par. Expenses of the issue will be 2.0% of the amount borrowed. The current exchange rate is $1.4500/E and the Euro is expected to depreciate against the dollar by 1.5% per year.

(b) ***Borrow in U.S. Dollars:*** Borrow in Dollars at 6% p.a. with bonds sold at par. Expenses of the issue will be 2.5% of the amount borrowed.

(c) ***Borrow in Yen:*** Borrow in Yen at 5% p.a.. The bonds will be sold at par and expenses would be 3.5% of the face value of the issue. The current exchange rate is ¥130,00/$, and the yen is expected to appreciate against the dollar by 2% p.a.

Question

Evaluate the cost of each alternative. Give recommendation as to which source of debt capital is likely to be least expensive for the five year period.

Source: *International Financial Management*, Madhu Vij, Excel Books.

4.6 Summary

- The Euro Currency market plays a key role in the capital investment decisions of many firms since it is a funding source for corporate borrowing. The market is totally a creation of the regulations placed by national governments on banking.
- The currencies, which have become popular as Eurocurrency and tend to be widely used include the US dollar, the British pound, the French franc, The German mark and a few other currencies.
- Domestic issues are different from Euro issues. Some of the important points of distinction are—first, underwriting and pricing of the issue is done in advance for domestic issues while it is done on the day of the issue for Euro issues. Second, the risk factors are highlighted' and mentioned in the prospectus while there is no such requirement in Euro issues. Also the registration is done by SEBI for domestic issues while it is done by the Ministry of Finance for Euro issues.
- The Eurobond market has become popular and has flourished in the last few years due to several unique features that sets it apart from the domestic and foreign bond market.
- More and more Indian corporates are finding the route of raising money through ECBs very attractive.
- The existence of lower cost of funds in these markets inspite of the currency differential and the costs associated with hedging the exposure as compared to the high costs prevailing in the domestic market have made these markets the darling of eligible Indian companies. Companies which meet the RBI guidelines raise funds in these markets more as a matter of rule rather than exception.

Notes

- ECBs may be raised from any internationally recognised source such as banks, export credit agencies, foreign collaborator etc. There are two kinds of risks involved in ECBs – interest rate risk and exchange rate risk.
- Companies must manage the exposure arising due to adverse changes of exchange rates or the interest rates to safeguard their position.

4.7 Keywords

Bunny Bonds: These bonds permit investors to reinvest their interest income into more such bonds with the same terms and conditions, thus compounding their earnings.

Deep Discount Convertibles: These are also known as Zero Coupon Convertible Bonds. They are issued at a discount to the par value and mature at par value. Thus, they have no or very low interest payments.

Euro Bonds: Euro bonds are unsecured debt securities issued and sold in markets outside the home country of the issuer (borrower) and denominated in a currency different from that of the home country of the issuer.

Euro Equity: If a company raises funds using equity route through instruments like Global Depository Receipts (GDRs) or Superstock Equity in more than one foreign market except the domestic market of the issuing company and denominated in a currency other than that of the issuer's home country, it is known as 'Euro Equity Issue' or 'Global Equity Issue'.

Foreign Bonds: These are the bonds floated in a particular domestic capital market (and in the domestic currency of that market) by non-resident entities. The bonds are generally named on the basis of the capital markets in which they are floated.

Foreign Currency Convertible Bonds (FCCBs): The instrument floated by the Indian companies are commonly referred to as Foreign Currency Bonds (FCCBs).

Foreign Equity: If the equity issue is made in a particular domestic market (and in the domestic currency of that market), it is known as a 'Foreign Equity Issue'.

LIBOR: The base interest rate paid on deposits among banks in the Eurocurrency market is called LIBOR.

4.8 Review Questions

1. What is meant by Eurocurrency markets? What are the reasons for the existence of the Eurodollar market? Can the Eurocurrency create money?
2. What are the problems created by the existence of the Eurocurrency market? What are some of the important benefits that result from this market?
3. What are the necessary conditions for the existence of a Euromarket?
4. Briefly describe the characteristics of the Eurodollar market.
5. List the major advantages of Euro issues to Indian companies.
6. Has the performance of Indian Euro issues been satisfactory? Why or why not?
7. Explain the characteristics of GDRs and how they are priced.
8. Give similarities and differences between domestic issues and Euro issues.
9. What are foreign currency convertible bonds? Are they more beneficial to the issuer than a GDR?
10. What is the International Bond Market? Enumerate the important features of this market.

Notes

Answers: Self Assessment

1.	Eurocurrency	2.	Foreign
3.	Five	4.	Working
5.	LIBOR	6.	Floating
7.	fixed	8.	bonds
9.	'Euro Equity Issue' or 'Global Equity Issue'		
10.	Equity	11.	cost of capital
12.	RBI	13.	three
14.	FCCBs	15.	Deep Discount Convertibles

4.9 Further Readings

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Unit 5: Currency Forecasting

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Objectives

After studying this unit, you will be able to:

- Explain the Purchasing Power Parity (PPP)
- Describe the Interest Rate Parity (IRP)
- Discuss the International Fisher Effect (IFE)
- Explain the Comparison of Purchasing Power Parity, International Fisher Effect and Interest Rate Parity Theories

Introduction

The phenomenon of exchange rates movement is an important issue in international finance and managers of multinational firms, international investors, importers and exporters and government officials attach enormous importance to it. In fact, they have to deal with the issue of exchange rates every day. Yet, the determination of exchange rates remains something of a mystery. Forecasters with the most impressive records frequently go wrong in their calculations by substantial margins. However, many times poor forecasting is due to unforeseeable events. For example, at the beginning of 1984, all forecasters uniformly predicted that the dollar would decline against other major currencies. But the dollar proceeded to rise throughout the year although in other respects the general performance of the world economy did not radically depart from forecasts. This clearly shows that the theoretical models or other models used by

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forecasters were not correct and also that the mechanics of exchange rate determination needs to studied thoroughly.

The tremendous increase in international mobility of capital as a result of marked improvements in telecommunications all over and also lesser restrictions on international financial transactions has made the concept of exchange rate determination more complicated and difficult to understand. The above factors have often resulted in the forex market behaving like a volatile stock market. In fact, economists now have been forced to reverse their thinking about exchange rate determination.

Thus, while much remains to be learned about exchange rates, a lot is also understood about them. Exchange rates forecasts have often been wrong, though many times they have also met with impressive success. Also, when exchange rate determination has been matched against historical records, it has had much explanatory power.

Are changes in exchange rates predictable? How does inflation affect exchange rates? How are interest rate related to exchange rates? What is the 'proper exchange rate' in theory? For an answer to these fundamental issues, it is essential to understand the different theories of exchange rate determination.

The three theories of exchange rate determination are:

1. Purchasing Power Parity (PPP), which links spot exchange rates to nations' price levels.
2. The Interest Rate Parity (IRP).
3. The International Fisher Effect (IFE) which links exchange rates to nations' nominal interest rate levels.

5.1 Purchasing Power Parity (PPP)

The PPP theory focuses on the inflation-exchange rate relationships. If the law of one price were true for all goods and services, we could obtain the theory of PPP. There are two forms of the PPP theory.

5.1.1 Absolute Purchasing Power Parity

The absolute PPP theory postulates that the equilibrium exchange rate between currencies of two countries is equal to the ratio of the price levels in the two nations. Thus, prices of similar products of two different countries should be equal when measured in a common currency as per the absolute version of PPP theory.

A Swedish economist, Gustav Cassel, popularised the PPP in the 1920s. When many countries like Germany, Hungary and Soviet Union experienced hyperinflation in those years, the purchasing power of the currencies in these countries sharply declined. The same currencies also depreciated sharply against the stable currencies like the US dollar. The PPP theory became popular against this historical backdrop.

Let P_a refer to the general price level in nation A, P_b the general price level in nation B and R_{ab} to the exchange rate between the currency of nation A and currency of nation B. Then the absolute purchasing power parity theory postulates that

$$R_{ab} = P_a/P_b$$

For example, if nation A is the US and nation B is the UK, the exchange rate between the dollar and the pound is equal to the ratio of US to UK Prices. For example, if the general price level in

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the US is twice the general price level in the UK, the absolute PPP theory postulates the equilibrium exchange rate to be Rab = $2/£1.

In reality, the exchange rate between the dollar and the pound could vary considerably from $2/£1 due to various factors like transportation costs, tariffs, or other trade barriers between the two countries. This version of the absolute PPP has a number of defects. First, the existence of transportation costs, tariffs, quotas or other obstructions to the free flow of international trade may prevent the absolute form of PPP. The absolute form of PPP appears to calculate the exchange rate that equilibrates trade in goods and services so that a nation experiencing capital outflows would have a deficit in its BOP while a nation receiving capital inflows would have a surplus. Finally, the theory does not even equilibrate trade in goods and services because of the existence of non-traded goods and services.

Non-traded goods such as cement and bricks, for which the transportation cost is too high, cannot enter international trade except perhaps in the border areas. Also, specialised services like those of doctors, hairstylists, etc., do not enter international trade. International trade tends to equate the prices of traded goods and services among nations but not the prices of non-traded good and services. The general price level in each nation includes both traded and non-traded goods and since the prices of non-traded goods are not equalised by international trade, the absolute PPP will not lead to the exchange rate that equilibrates trade and has to be rejected.

5.1.2 Relative Purchasing Power Parity

The relative form of PPP theory is an alternative version which postulates that the change in the exchange rate over a period of time should be proportional to the relative change in the price levels in the two nations over the same time period. This form of PPP theory accounts for market imperfections such as transportation costs, tariffs and quotas. Relative PPP theory accepts that because of market imperfections prices of similar products in different countries will not necessarily be the same when measured in a common currency.

Did u know? What it specifically states is that the rate of change in the prices of products will be somewhat similar when measured in a common currency as long as the trade barriers and transportation costs remain unchanged.

Specifically, if subscript '0' refers to the base period and '1' to a subsequent period then relative PPP theory postulates that

$$R_{ab1} = \frac{P_{a_1}/P_{a_0}}{P_{bi}/P_{b0}} R_{ab0}$$

where R_{ab1} and R_{ab0} refer to the exchange rates in period 1 and in the base period respectively.

If the absolute PPP were to hold true, the relative PPP would also hold. However, the vice versa need not hold. For example, obstructions to the free flow of international trade like transportation costs, existence of capital flows, government intervention policies, etc. would lead to the rejection of the absolute PPP. However, only a change in these factors would lead to the rejection of the relative PPP.

5.1.3 Graphic Analysis of Purchasing Power Parity

Figure 5.1 shows the Purchasing Power Parity theory which helps us to assess the potential impact of inflation on exchange rates. The vertical axis measures the percentage appreciation or depreciation of the foreign currency relative to the home currency while the horizontal axis

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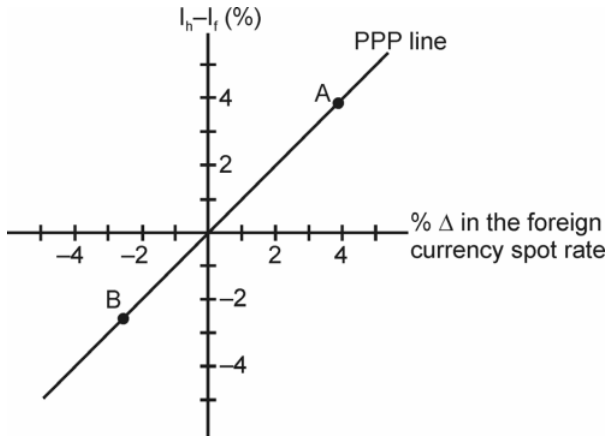
measures the percentage by which the inflation in the foreign country is higher or lower relative to the home country. The points in the diagram show that given the inflation differential between the home and the foreign country, say by X per cent, the foreign currency should adjust by X per cent due to the differential in inflation rates. The diagonal line connecting all these points together is known as the PPP line and it depicts the equilibrium position between a change in the exchange rates and relative inflation rates.

For example, point A represents an equilibrium point where inflation in the foreign country, say UK, is 4% lower than the home country, say India, so that $I_h - I_f = 4\%$. This will lead to an appreciation of the British pound by 4% per annum with respect to the Indian rupee.

Figure 5.1: Impact of Inflation on Exchange Rate under PPP



Point B in the Figure 5.1 shows a point where the difference in the inflation rates in India and Mexico is assumed to be 3% so that $I_h - I_f = -3\%$. This will lead to an anticipated depreciation of the Mexican peso by 3 per cent, as depicted by point B. If the exchange rate responds to inflation differentials according to the PPP, the points will lie on or close to the PPP line.

5.1.4 Empirical Testing of Purchasing Power Parity Theory

Substantial empirical research has been done to test the validity of PPP theory. The general conclusions of most of these tests have been that PPP does not accurately predict future exchange rates and that there are significant deviations from PPP persisting for lengthy periods.

Task Examine the relationship between relative inflation rates and exchange rate movements over time to test whether PPP exists or is their evidence to suggest that there are significant deviations over time. The exercise could be performed for different currencies.

Self Assessment

State whether the following statements are true or false:

1. The PPP theory focuses on the inflation-exchange rate relationships.
2. According to PPP Theory the prices of similar products of two different countries should be equal when measured in a common currency.

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3. Relative form of PPP theory accounts for market imperfections such as transportation costs, tariffs and quotas.
4. Substantial Empirical research has been done to test the validity of PPP theory.
5. The absolute PPP theory postulates that the equilibrium exchange rate between currencies of two countries is equal to the ratio of the price levels in the two nations.
6. Relative PPP theory accepts that because of market imperfections prices of similar products in different countries will necessarily be the same when measured in a common currency.

5.2 Interest Rate Parity (IRP)

Interest rate parity is an economic concept, expressed as a basic algebraic identity that relates interest rates and exchange rates. The identity is theoretical, and usually follows from assumptions imposed in economic models. There is evidence to support as well as to refute the concept. Interest rate parity is a non-arbitrage condition which says that the returns from borrowing in one currency, exchanging that currency for another currency and investing in interest-bearing instruments of the second currency, while simultaneously purchasing futures contracts to convert the currency back at the end of the holding period, should be equal to the returns from purchasing and holding similar interest-bearing instruments of the first currency. If the returns are different, an arbitrage transaction could, in theory, produce a risk-free return. Looked at differently, interest rate parity says that the spot price and the forward or futures price of a currency incorporate any interest rate differentials between the two currencies. According to interest rate parity the difference between the (risk free) interest rates paid on two currencies should be equal to the differences between the spot and forward rates.

If interest rate parity is violated, then an arbitrage opportunity exists. The simplest example of this is what would happen if the forward rate was the same as the spot rate but the interest rates were different, than investors would:

1. Borrow in the currency with the lower rate.
2. Convert the cash at spot rates.
3. Enter into a forward contract to convert the cash plus the expected interest at the same rate.
4. Invest the money at the higher rate.
5. Convert back through the forward contract.
6. Repay the principal and the interest, knowing the latter will be less than the interest received.

5.2.1 Types of Interest Rate Parity (IRP)

There are two types of interest rate parity. These are: (1) Covered Interest Rate Parity and (2) Uncovered Interest Rate Parity.

Covered Interest Rate Parity

Assuming the arbitrage opportunity described above does not exist, then the relationship for US dollars and pounds sterling is:

$$(1 + r_{£})/(1 + r_{\$}) = (£/\$_{f})/(£/\$_{s})$$

- where $r_{£}$ is the sterling interest rate (till the date of the forward),
- $r_{\$}$ is the dollar interest rate,

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- £/$$_f$ is the forward sterling to dollar rate,
- £/$$_s$ is the spot sterling to dollar rate

Unless interest rates are very high or the period considered is long, this is a very good approximation:

$$r_{£} = r_{\$} + f$$

- where f is the forward premium: $(£/\$_f)/(£/\$_s) - 1$

The above relationship is derived from assuming that covered interest arbitrage opportunities should not last, and is therefore called covered interest rate parity.

Uncovered Interest Rate Parity

Assuming uncovered interest arbitrage leads us to a slightly different relationship:

$$r = r_2 + E[\Delta S]$$

Where $E[\Delta S]$ is the expected change is exchange rates.

This is called uncovered interest rate parity.

As the forward rate will be the market expectation of the change in rates, this is equivalent to covered interest rate parity – unless one is speculating on market expectations being wrong. The evidence on uncovered interest rate parity is mixed.

Self Assessment

Fill in the blanks:

7. Interest rate parity is a …… condition.
8. If interest rate parity is violated, then an …… opportunity exists.
9. According to interest rate parity the difference between the (risk free) interest rates paid on two currencies should be equal to the differences between the …… rates.
10. The interest rate parity includes the …… and uncovered interest rate parity.
11. The evidence on uncovered interest rate parity is …….

Caselet

Parity Conditions in International Finance

At the cornerstone of international finance relations, lie the PPP doctrine and the three international interest parity conditions, viz. the Covered Interest Parity (CIP), the Uncovered Interest Parity (UIP) and the Fisher's Real Interest Parity (RIP). These parity conditions indicate the degree of market integration of the domestic economy with the rest of the world.

Indian Evidence

Empirical estimates of parity conditions are plagued with theoretical and econometric difficulties that make conclusions difficult even in the case of well developed markets. Differences in estimates arise primarily from model specifications, choice techniques and

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due to sample periods over which the models are estimated. Theoretical difficulties arise from the existence of trade restrictions, transport and transaction costs, as also from rate consumption and interest rate smoothing behaviour. In practice, persistent swings in real exchange rate are observed. For India, Pattanaik (1999) finds that PPP over the long run defines the presence of a cointegrated relationship between exchange rate and relative prices and the misalignment at any point of time is corrected by 7.7 per cent per quarter through nominal exchange rate adjustments. Bhoi and Dhal (1998) tested for the relevance of UIP and CIP and concluded that neither holds true.

Other Countries

Much research has been conducted to test whether PPP exists. Various studies in US have found evidence of significant deviations from PPP, persistently for lengthy periods.

Whether the IFE holds true in reality depends on the particular time period examined. In 1978-79, the US interest rates were generally higher than foreign interest rates and the foreign currency values strengthened during this period, supporting IFE theory to an extent. However, during the 1980-84 period, the foreign currencies consistently weakened far beyond what would have been anticipated according to IFE theory. Also, during the 1985-87 period, foreign currencies strengthened to a much greater degree than suggested by the interest differential. Thus, IFE may hold for sometime, but there is evidence that it does not consistently hold true.

Source: *International Financial Management*, Madhu Vij, Excel Books.

5.3 International Fisher Effect (IFE)

The IFE uses interest rates rather than inflation rate differential to explain the changes in exchange rates over time. IFE is closely related to the PPP because interest rates are significantly correlated with inflation rates. The relationship between the percentage change in the spot exchange rate over time and the differential between comparable interest rates in different national capital markets is known as the 'International Fisher Effect.'

The IFE suggests that given two countries, the currency in the country with the higher interest rate will depreciate by the amount of the interest rate differential. That is, within a country, the nominal interest rate tends to approximately equal the real interest rate plus the expected inflation rate. Both, theoretical considerations and empirical research, had convinced Irving Fisher that changes in price level expectations cause a compensatory adjustment in the nominal interest rate and that the rapidity of the adjustment depends on the completeness of the information possessed by the participants in financial markets. The proportion that the nominal interest rate varies directly with the expected inflation rate, known as the 'Fisher effect, has subsequently been incorporated into the theory of exchange rate determination. Applied internationally, the IFE suggests that nominal interest rates are unbiased indicators of future exchange rates.

Did u know? A country's nominal interest rate is usually defined as the risk free interest rate paid on a virtually costless loan. Risk free in this context refers to risks other than inflation.

In an expectational sense, a country's real interest rate is its nominal interest rate adjusted for the expected annual inflation rate. It can be viewed as the real amount by which a lender expects the value of the funds lent to increase on an annual basis. For a firm using its own funds, it can be viewed as the expected real cost of doing so. The nominal interest rate consists of a real rate of

Notes

return and anticipated inflation. The nominal interest rate would also incorporate the default risk of an investment.

It is often argued that an increase in a country's interest rates tends to increase the exchange value of its currency by inducing capital inflows. However, the IFE argues that a rise in a country's nominal interest rate relative to the nominal interest rates of other countries indicates that the exchange value of the country's currency is expected to fall. This is due to the increase in the country's expected inflation and not due to the increase in the nominal interest rate.

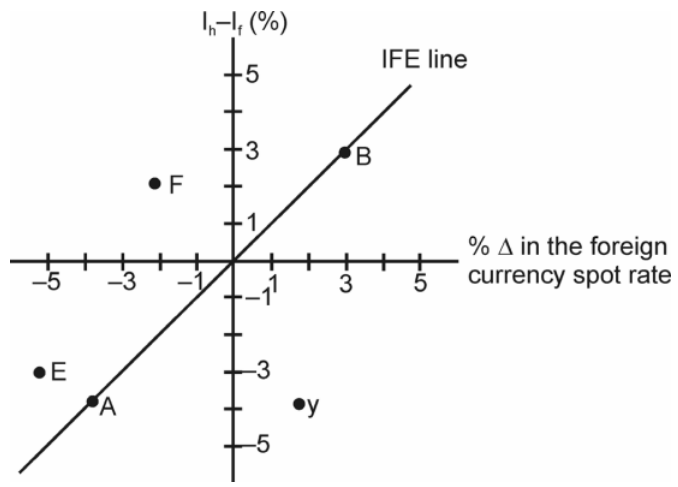
Caution The IFE implies that if the nominal interest rate does not sufficiently increase to maintain the real interest rate, the exchange value of the country's currency tends to decline even further.

Graphic Analysis of the International Fisher

Figure 5.2 illustrates the IFE. The X axis shows the percentage change in the foreign currency's spot rate while the Y axis shows the difference between the home interest rate and the foreign interest rate ($I_h - I_f$). The diagonal line indicates the IFE line and depicts the exchange rate adjustment to offset the differential in interest rates. For all points on the IFE line, an investor will end up achieving the same yield (adjusted for exchange rate fluctuations) whether investing at home or in a foreign country.

Point A in the Figure 5.2 shows a situation where the foreign interest exceeds the home interest rate by 4 percentage points, yet, the foreign currency depreciates by 4 per cent to offset its interest rate advantage. This would mean that an investor setting up a deposit in the foreign country would have achieved a return similar to what was possible domestically. Point B represents a home interest rate 3 per cent above the foreign interest rate. If investors from the home country establish a foreign deposit, they will be at a disadvantage regarding the foreign interest rate. But the IFE theory suggests that the currency should appreciate by 3 per cent to offset the interest rate disadvantage.

Figure 5.2: Illustration of IFE Line (When Exchange Rate Changes Perfectly Offset Interest Rate Differentials)



Notes

Notes The IFE suggests that if a company regularly makes foreign investments to take advantage of higher foreign interest rates, it will achieve a yield that is sometimes below and sometimes above the domestic yield.

Points above the IFE line like E and F reflect lower returns from foreign deposits than the returns that are possible domestically. For example, point E represents a foreign interest rate that is 3 per cent above the home interest rate. Yet, point E suggests that the exchange rate of the foreign currency depreciated by 5 per cent to more than offset its interest rate disadvantage.

Points below the IFE line show that the firm earns higher returns from investing in foreign deposits. For example, consider point Y in the Figure 5.2. The foreign interest rate exceeds the home interest rate by 4 per cent. The foreign currency also appreciated by 2 per cent. The combination of the higher foreign interest rate plus the appreciation of the foreign currency will cause the foreign yield to be higher than what was possible domestically. If an investor were to compile and plot the actual data and if a majority of the points were to fall below the IFE, this would suggest that the investors of the home country could have consistently increased their investment returns by investing in foreign bank deposits. Such results refute the IFE theory.

Task Examine the relationship between interest rate differential and exchange rate changes for a few currencies over time to determine whether the International Fisher Effect (IFE) appears to hold over time for the currencies examined.

Self Assessment

Fill in the blanks:

12. A country's ..... interest rate is usually defined as the risk free interest rate paid on a virtually costless loan.
13. The IFE argues that a rise in a country's nominal interest rate relative to the nominal interest rates of other countries indicates that the ..... value of the country's currency is expected to fall.
14. The IFE uses ..... rates rather than inflation rate.
15. The IFE suggests that nominal interest rates are unbiased indicators of ..... exchange rates.

5.4 Comparison of Purchasing Power Parity, International Fisher Effect and Interest Rate Parity Theories

Table 5.1 compares three related theories of international finance, namely (i) Interest Rate Parity (IRP) (ii) Purchasing Power Parity (PPP) and (iii) the International Fisher Effect (IFE). All three theories relate to the determination of exchange rates. Yet, they differ in their implications. The theory of IRP focuses on why the forward rate differs from the spot rate and the degree of difference that should exist. This relates to a specific point in time. The, PPP theory and IFE theory focus on how a currency's spot rate will change over time. While PPP theory suggests that the spot rate will change in accordance with inflation differentials, IFE theory suggests that it will change in accordance with interest rate differential.

Notes

Table 5.1: Comparison of IRP, PPP and IFE Theories

Theory	Key Variables of Theory		Summary of Theory
Interest Rate Party (IRP)	Forward rate premium (or discount)	Interest differential	• The forward rate of one currency with respect to another will contain a premium (or discount) that is determined by the differential in interest rates between the two countries. • Covered interest arbitrage will provide a return that is not higher than the domestic return.
Purchasing Power Parity (PPP)	Percentage change in spot exchange rate	Inflation rate differential	• The spot rate of one currency with respect to another will change in reaction to the differential in inflation rates between the two countries. • The purchasing power for consumers in home country will be similar to their purchasing power when importing goods from the foreign country.
International Fisher Effect (IFE)	Percentage change in spot exchange rate	Interest rate differential	• The spot rate of one currency with respect to another will change in accordance with the differential in interest rates between the two countries. • The return on uncovered foreign money market securities will be no higher than the return on domestic money market securities from the perspective of investors in the home country.

Source: Jeff Madura, 'International Financial Management'.

Case Study

Purchasing Power Parity

A Simple Test of Relative Purchasing Power Parity – Table 1 presents data that can be used as a test of the relative purchasing-power parity (PPP) theory over periods 1973–1987, 1988–2001, and 1973–2001 as a whole. For each time period, the first column gives the inflation rate in each of the major six industrial countries minus the US inflation rate. The second column in each time period gives the rate of depreciation of the national currency relative to the US dollar over the same period. The inflation rate is measured by the percentage change in the GDP deflator. This is the index by which the nominal Gross Domestic Product (GDP) is divided to get the real GDP. Theoretically, the Wholesale Price Index (WPI) would be a better measure of inflation for our purpose because it excludes services, most of which are not traded. The WPI, however, is poorly defined, and so it is better to use the GDP deflator. This is similar to the Consumer Price Index (CPI). Note that a negative value in the first column for each time period means that the nation faced a smaller rate of inflation than the United States, while a negative value in the second column in each time period means that the nation's currency appreciated with respect to the US dollar.

If the relative version of the PPP theory held exactly, in each time period the values for the national inflation rates minus the US inflation rate (the first column) would be identical (in sign and value) to the percentage depreciation of the national currency relative to the

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Notes

US dollar (the second column) for each country. From the table, we see that, except for France and Canada for the 1988–2001 period, all the nations that faced lower inflation rates Gap (Japan and Germany) than the United States experienced an appreciation of their currencies, while those that had a higher inflation rate experienced a depreciation of their currencies. Since the actual values in the first and second column in each of the three time periods in table often exhibit large differences, we cannot say that the relative PPP theory works very well in predicting even long-term exchange rates.

Table 1: Differences in Relative Inflation Rates and Currency Depreciation, 1973-2001

Country	1973-1987		1988-2001		1973-2001	
	Inflation Difference	Currency Depreciation	Inflation Difference	Currency Depreciation	Inflation Difference	Currency Depreciation
Japan	-15.8	-61.1	-20.3	-5.3	-32.5	-120.3
Germany	-27.2	-39.2	-2.9	21.8	-29.6	-25.7
France	32.6	29.8	-10.0	20.7	20.9	43.3
United Kingdom	47.1	39.8	14.1	21.2	46.0	45.6
Italy	70.7	76.4	21.9	49.8	64.6	91.2
Canada	12.4	28.0	-2.4	22.9	9.7	39.5

Questions

1. What do you mean by currency depreciation?
2. Discuss relative purchasing power parity?

Source: *International Business Environment*, Raj Kumar.

5.5 Summary

- At the cornerstone of international finance relations, there are three international interest parity conditions, viz., the covered interest parity, the PPP doctrine and the international fisher effect.
- These parity conditions indicate degree of market integration of the domestic economy with the rest of the world.
- The PPP theory focuses on the inflation-exchange rate relationship. Substantial empirical research has been done to test the validity of PPP theory.
- The general consensus has been that PPP does not accurately predict future exchange rates and there are significant deviations from PPP persisting for lengthy periods.
- The IFE uses interest rates rather than inflation rate differential to explain the changes in exchange rates over time.
- IFE is closely related to PPP because interest rates are significantly correlated with inflation rates.

5.6 Keywords

Absolute PPP Theory: Absolute PPP theory postulates that the equilibrium exchange rate between currencies of two countries is equal to the ratio of the price levels in the two nations.

Notes

Arbitrage: The simultaneous purchase and sale of an asset in order to profit from a difference in the price. It is a trade that profits by exploiting price differences of identical or similar financial instruments, on different markets or in different forms.

Hedge: Making an investment to reduce the risk of adverse price movements in an asset. Normally, a hedge consists of taking an offsetting position in a related security, such as a futures contract.

Interest Parity: Interest rate parity relates interest rates and exchange rates.

International Fisher Effect: The IFE uses interest rates rather than inflation rate differential to explain the changes in exchange rates over time.

Purchasing Power Parity theory: The PPP theory focuses on the inflation-exchange rate relationships.

Relative form of PPP Theory: Relative form of PPP theory is an alternative version which postulates that the change in the exchange rate over a period of time should be proportional to the relative change in the price levels in the two nations over the same time period.

Speculation: Taking large risks, especially with respect to trying to predict the future; gambling, in the hopes of making quick, large gains.

5.7 Review Questions

1. Explain the Purchasing Power Parity theory and the rationale behind it.
2. What is the rationale for the existence of the International Fisher Effect?
3. Write a brief note on the relative form of PPP theory.
4. Compare and contrast the Purchasing Power Parity theory, Covered Interest Arbitrage theory and the International Fisher Effect theory.
5. Give reason as to why Purchasing Power Parity does not hold true.
6. Define Interest Rate Parity.
7. What are the different types of Interest Rate Parity?
8. Explain the risk free interest rate.
9. Under what condition the exchange value of the country's currency tends to decline?
10. What would happen if the forward rate was the same as the spot rate but the interest rates were different?

Answers: Self Assessment

1.	True	2.	True
3.	True	4.	True
5.	True	6.	False
7.	Non-arbitrage	8.	arbitrage
9.	Spot and forward	10.	Covered
11.	Mixed	12.	nominal
13.	exchange	14.	Interest
15.	Future		

Notes

5.8 Further Readings

Books

Apte, P.G. *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi.

Bhalla, V.K. *International Financial Management*, Anmol Publishers.

Eun/Resnick, *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi.

Shapiro Allan C, *Multinational Financial Management*, Prentice Hall, New Delhi.

Online links

http://www.adelaide.edu.au/cies/papers/0501.pdf

http://www.m-anastopoulos.gr/admin1/files/International%20finance.pdf

http://www.scribd.com/doc/28707390/Theories-of-Exchange-Rate

http://www.slideshare.net/rameshwarpatel/exchange-rate-theory

Notes

Unit 6: Economic Fundamentals and Foreign Exchange Risk Exposure

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Objectives

After studying this unit, you will be able to:

- Explain the economic indicators
- Discuss the financial and socio-political factors
- Explain the Foreign Exchange Risk Exposure
- Discuss the Tools and Techniques of Foreign Exchange Risk Management

Introduction

This unit provides an overview of economic indicators, financial and socio-political factors and the various types of the foreign exchange risks faced by MNCs. A very important dimension of international finance is the role of economic fundamentals and exposure management and there has been an increased interest by MNCs in recent times in developing techniques and strategies for foreign exchange exposure management. The unit discusses the economic fundamentals or indicators and various kinds of exposure and then goes on to discuss the tools and techniques of exposure management.

Foreign exchange risk is linked to unexpected fluctuations in the value of currencies. A strong currency can very well be risky, while a weak currency may not be risky. The risk level depends on whether the fluctuations can be predicted. Short and long-term fluctuations have a direct impact on the profitability and competitiveness of business.

Notes

6.1 Economic Indicators

Economic indicators are reports released by the government or a private organization that detail a country's economic performance. Economic reports are the means by which a country's economic health is directly measured, but do remember that a great deal of factors and policies will affect a nation's economic performance.

These reports are released at scheduled times, providing the market with an indication of whether a nation's economy has improved or declined. The effects of these reports are comparable to how earnings reports, SEC filings and other releases may affect securities. In forex, as in the stock market, any deviation from the norm can cause large price and volume movements.

You may recognize some of these economic reports, such as the unemployment numbers, which are well publicized. Others, like housing stats, receive little coverage. However, each indicator serves a particular purpose, and can be useful. Here we outline major reports, some of which are comparable to particular fundamental indicators used by equity investors:

Gross National Product (GNP)

The Gross National Product measures the economic performance of the whole economy.

This indicator consists, at macro scale, of the sum of consumption spending, investment spending, government spending, and net trade. The gross national product refers to the sum of all goods and services produced by United States residents, either in the United States or abroad.

Gross Domestic Product (GDP)

The Gross Domestic Product (GDP) refers to the sum of all goods and services produced in the country, either by domestic or foreign companies. The differences between the two are nominal in the case of the economy of the United States. GDP figures are more popular outside the United States. In order to make it easier to compare the performances of different economies, the United States also releases GDP figures.

Consumption Spending

Consumption is made possible by personal income and discretionary income. The decision by consumers to spend or to save is psychological in nature. Consumer confidence is also measured as an important indicator of the propensity of consumers who have discretionary income to switch from saving to buying.

Investment Spending

Investment – or gross private domestic spending – consists of fixed investment and inventories.

Government Spending

Government spending is very influential in terms of both sheer size and its impact on other economic indicators, due to special expenditures. For instance, United States military expenditures had a significant role in total U.S. employment until 1990. The defense cuts that occurred at the time increased unemployment figures in the short run.

Net Trade

Net trade is another major component of the GNP. Worldwide internationalization and the economic and political developments since 1980 have had a sharp impact on the United States' ability to compete overseas.

Notes

Notes The U.S. trade deficit of the past decades has slowed down the overall GNP.

Did u know? GNP can be approached in two ways: flow of product and flow of cost.

Industrial Production

Industrial production consists of the total output of a nation's plants, utilities, and mines. From a fundamental point of view, it is an important economic indicator that reflects the strength of the economy, and by extrapolation, the strength of a specific currency. Therefore, foreign exchange traders use this economic indicator as a potential trading signal.

Capacity Utilization

Capacity utilization consists of total industrial output divided by total production capability. The term refers to the maximum level of output a plant can generate under normal business conditions. In general, capacity utilization is not a major economic indicator for the foreign exchange market.

However, there are instances when its economic implications are useful for fundamental analysis. A "normal" figure for a steady economy is 81.5 percent. If the figure reads 85 percent or more, the data suggests that the industrial production is overheating, that the economy is close to full capacity.

High capacity utilization rates precede inflation, and expectation in the foreign exchange market is that the central bank will raise interest rates in order to avoid or fight inflation.

Factory Orders

Factory orders refer to the total of durable and nondurable goods orders. Nondurable goods consist of food, clothing, light industrial products, and products designed for the maintenance of durable goods. Durable goods orders are discussed separately. The factory orders indicator has limited significance for foreign exchange traders.

Durable Goods Orders

Durable goods orders consist of products with a life span of more than three years. Examples of durable goods are autos, appliances, furniture, jewelry, and toys. They are divided into four major categories: primary metals, machinery, electrical machinery, and transportation.

In order to eliminate the volatility pertinent to large military orders, the indicator includes a breakdown of the orders between defense and nondefense.

Caution This data is fairly important to foreign exchange markets because it gives a good indication of consumer confidence. Because durable goods cost more than nondurables, a high number in this indicator shows consumers' propensity to spend. Therefore, a good figure is generally bullish for the domestic currency.

Notes

Business Inventories

Business inventories consist of items produced and held for future sale.

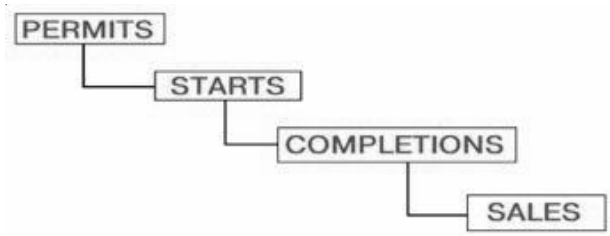
The compilation of this information is facile and holds little surprise for the market. Moreover, financial management and computerization help control business inventories in unprecedented ways. Therefore, the importance of this indicator for foreign exchange traders is limited.

Construction Indicators

Construction indicators constitute significant economic indicators that are included in the calculation of the GDP of the United States. Moreover, housing has traditionally been the engine that pulled the U.S. economy out of recessions after World War II. These indicators are classified into three major categories: (1) housing starts and permits; (2) new and existing one-family home sales and (3) construction spending.

Private housing is monitored closely at all the major stages (See Figure 6.1). Private housing is classified based on the number of units (one, two, three, four, five, or more); region (Northeast, West, Midwest, and South); and inside or outside metropolitan statistical areas.

Figure 6.1: Diagram of Construction of Private Housing



Construction indicators are cyclical and very sensitive to the level of interest rates (and consequently mortgage rates) and the level of disposable income. Low interest rates alone may not be able to generate a high demand for housing, though. As the situation in the early 1990s demonstrated, despite historically low mortgage rates in the United States, housing increased only marginally, as a result of the lack of job security in a weak economy.

Housing starts between one and a half and two million units reflect a strong economy, whereas a figure of approximately one million units suggests that the economy is in recession.

Inflation Indicators

The rate of inflation is the widespread rise in prices. Therefore, gauging inflation is a vital macroeconomic task. Traders watch the development of inflation closely, because the method of choice for fighting inflation is raising the interest rates, and higher interest rates tend to support the local currency.

Moreover, the inflation rate is used to "deflate" nominal interest rates and the GNP or GDP to their real values in order to achieve a more accurate measure of the data.

The values of the real interest rates or real GNP and GDP are of the utmost importance to the money managers and traders of international financial instruments, allowing them to accurately compare opportunities worldwide.

To measure inflation traders use following economic tools:

- Producer Price Index (PPI);

- Consumer Price Index (CPI);
- GNP Deflator;
- GDP Deflator;
- Employment Cost Index (ECI);
- Commodity Research Bureau's Index (CRB Index);
- Journal of Commerce Industrial Price Index (JoC).

The first four are strictly economic indicators; they are released at specific intervals. The commodity indexes provide information on inflation quickly and continuously. Other economic data that measure inflation are unemployment, consumer prices, and capacity utilization.

(a) ***Producer Price Index (PPI):*** Producer price index is compiled from most sectors of the economy, such as manufacturing, mining, and agriculture. The sample used to calculate the index contains about 3400 commodities. The weights used for the calculation of the index for some of the most important groups are: food - 24 percent; fuel - 7 percent; autos - 7 percent; and clothing - 6 percent. Unlike the CPI, the PPI does not include imported goods, services, or taxes.

(b) ***Consumer Price Index (CPI):*** Consumer price index reflects the average change in retail prices for a fixed market basket of goods and services. The CPI data is compiled from a sample of prices for food, shelter, clothing, fuel, transportation, and medical services that people purchase on daily basis. The weights attached for the calculation of the index to the most important groups are: housing - 38 percent; food - 19 percent; fuel - 8 percent; and autos - 7 percent.

Notes The two indexes, PPI and CPI, are instrumental in helping traders measure inflationary activity, although the Federal Reserve takes the position that the indexes overstate the strength of inflation.

(c) ***Gross National Product Implicit Deflator:*** Gross national product implicit deflator is calculated by dividing the current dollar GNP figure by the constant dollar GNP figure.

(d) ***Gross Domestic Product Implicit Deflator:*** Gross domestic product implicit deflator is calculated by dividing the current dollar GDP figure by the constant dollar GDP figure.

Both the GNP and GDP implicit deflators are released quarterly, along with the respective GNP and GDP figures. The implicit deflators are generally regarded as the most significant measure of inflation.

(e) ***Commodity Research Bureau's Futures Index (CRB Index):*** The Commodity Research Bureau's Futures Index makes watching for inflationary trends easier. The CRB Index consists of the equally weighted futures prices of 21 commodities. The components of the CRB Index are:

- Precious metals: gold, silver, platinum;.
- Industrials: crude oil, heating oil, unleaded gas, lumber, copper, and cotton;.
- Grains: corn, wheat, soybeans, soy meal, soy oil;
- Livestock and meat: cattle, hogs, and pork bellies;.
- Imports: coffee, cocoa, sugar;.
- Miscellaneous: orange juice.

Notes

The preponderance of food commodities makes the CRB Index less reliable in terms of general inflation. Nevertheless, the index is a popular tool that has proved quite reliable since the late 1980s.

(f) ***The "Journal of Commerce" Industrial Price Index (JoC):*** The "Journal of commerce" industrial price index consists of the prices of 18 industrial materials and supplies processed in the initial stages of manufacturing, building, and energy production. It is more sensitive than other indexes, as it was designed to signal changes in inflation prior to the other price indexes.

Merchandise Trade Balance

This is one of the most important economic indicators. Its value may trigger long-lasting changes in monetary and foreign policies. The trade balance consists of the net difference between the exports and imports of a certain economy. The data includes six categories:

1. Food;
2. Raw materials and industrial supplies;
3. Consumer goods;
4. Autos;
5. Capital goods;
6. Other merchandise.

Employment Indicators

The employment rate is an economic indicator with significance in multiple areas. The rate of employment, naturally, measures the soundness of an economy. The unemployment rate is a lagging economic indicator. It is an important feature to remember, especially in times of economic recession. Whereas people focus on the health and recovery of the job sector, employment is the last economic indicator to rebound. When economic contraction causes jobs to be cut, it takes time to generate psychological confidence in economic recovery at the managerial level before new positions are added. At individual levels, the improvement of the job outlook may be clouded when new positions are added in small companies and thus not fully reflected in the data. The employment reports are significant to the financial markets in general and to foreign exchange in particular. In foreign exchange, the data is truly affective in periods of economic transition – recovery and contraction. The reason for the indicators' importance in extreme economic situations lies in the picture they paint of the health of the economy and in the degree of maturity of a business cycle. A decreasing unemployment figure signals a maturing cycle, whereas the opposite is true for an increasing unemployment indicator.

Employment Cost Index (ECI)

Employment cost index measures wages and inflation and provides the most comprehensive analysis of worker compensation, including wages, salaries, and fringe benefits. The ECI is one of the Fed's favorite quarterly economic statistics.

Consumer Spending Indicators

Retail sales is a significant consumer spending indicator for foreign exchange traders, as it shows the strength of consumer demand as well as consumer confidence component in the calculation of other economic indicators, such as GNP and GDP.

Notes

Generally, the most commonly used employment figure is not the monthly unemployment rate, which is released as a percentage, but the nonfarm payroll rate. The rate figure is calculated as the ratio of the difference between the total labor force and the employed labor force, divided by the total labor force. The data is more complex, though, and it generates more information. In foreign exchange, the standard indicators monitored by traders are the unemployment rate, manufacturing payrolls, nonfarm payrolls, average earnings, and average workweek. Generally, the most significant employment data are manufacturing and nonfarm payrolls, followed by the unemployment rate.

Auto Sales

Despite the importance of the auto industry in terms of both production and sales, the level of auto sales is not an economic indicator widely followed by foreign exchange traders. The American automakers experienced a long, steady market share loss, only to start rebounding in the early 1990s. But car manufacturing has become increasingly internationalized, with American cars being assembled outside the United States and Japanese and German cars assembled within the United States. Because of their confusing nature, auto sales figures cannot easily be used in foreign exchange analysis.

Leading Indicators

The leading indicators consist of the following economic indicators:

1. Average workweek of production workers in manufacturing;
2. Average weekly claims for state unemployment;
3. New orders for consumer goods and materials (adjusted for inflation);
4. Vendor performance (companies receiving slower deliveries from suppliers);
5. Contracts and orders for plant and equipment (adjusted for inflation);
6. New building permits issued;
7. Change in manufacturers' unfilled orders, durable goods;.
8. Change in sensitive materials prices.

Personal Income

Personal Income is the income received by individuals, nonprofit institutions, and private trust funds. Components of this indicator include wages and salaries, rental income, dividends, interest earnings, and transfer payments (Social Security, state unemployment insurance, and veterans' benefits). The wages and salaries reflect the underlying economic conditions.

This indicator is vital for the sales sector. Without an adequate personal income and a propensity to purchase, consumer purchases of durable and nondurable goods are limited.

Self Assessment

Fill in the blanks:

1. ……. indicators are reports released by the government or a private organization that detail a country's economic performance.
2. The …… measures the economic performance of the whole economy.

Notes

3. The ..... refers to the sum of all goods and services produced in the country, either by domestic or foreign companies.
4. ..... production consists of the total output of a nation's plants, utilities, and mines.
5. Capacity utilization refers to the ..... level of output a plant can generate under normal business conditions.
6. ..... orders refer to the total of durable and nondurable goods orders.
7. Durable goods orders consist of products with a life span of more than ..... years.
8. ..... reflects the average change in retail prices for a fixed market basket of goods and services.
9. ..... implicit deflator is calculated by dividing the current dollar GNP figure by the constant dollar GNP figure.
10. The CRB Index consists of the equally weighted futures prices of ..... commodities.

6.2 Financial and Socio-political Factors

The Role of Financial Factors: Financial factors are vital to fundamental analysis. Changes in a government's monetary or fiscal policies are bound to generate changes in the economy, and these will be reflected in the exchange rates. Financial factors should be triggered only by economic factors. When governments focus on different aspects of the economy or have additional international responsibilities, financial factors may have priority over economic factors. This was painfully true in the case of the European Monetary System in the early 1990s. The realities of the marketplace revealed the underlying artificiality of this approach. Using the interest rates independently from the real economic environment translated into a very expensive strategy.

Because foreign exchange, by definition, consists of simultaneous transactions in two currencies, then it follows that the market must focus on two respective interest rates as well. This is the interest rate differential, a basic factor in the markets. Traders react when the interest rate differential changes, not simply when the interest rates themselves change. For example, if all the G-5 countries decided to simultaneously lower their interest rates by 0.5 percent, the move would be neutral for foreign exchange, because the interest rate differentials would also be neutral.

Of course, most of the time the discount rates are cut unilaterally, a move that generates changes in both the interest differential and the exchange rate. Traders approach the interest rates like any other factor, trading on expectations and facts. For example, if rumor says that a discount rate will be cut, the respective currency will be sold before the fact. Once the cut occurs, it is quite possible that the currency will be bought back, or the other way around. An unexpected change in interest rates is likely to trigger a sharp currency move. "Buy on the rumor, sell on the fact...".

Other factors affecting the trading decision are the time lag between the rumor and the fact, the reasons behind the interest rate change, and the perceived importance of the change. The market generally prices in a discount rate change that was delayed. Since it is a fait accompli, it is neutral to the market. If the discount rate was changed for political rather than economic reasons, what is a common practice in the European Monetary System, the markets are likely to go against the central banks, sticking to the real fundamentals rather than the political ones. This happened in both September 1992 and the summer of 1993, when the European central banks lost unprecedented amounts of money trying to prop up their currencies, despite having high interest

rates. The market perceived those interest rates as artificially high and, therefore, aggressively sold the respective currencies.

Finally, traders deal on the perceived importance of a change in the interest rate differential.

Political Events and Crises: Political events generally take place over a period of time, but political crises strike suddenly. They are almost always, by definition, unexpected.

Currency traders have a knack for responding to crises. Speed is essential; shooting from the hip is the only fighting option. The traders' reflexes take over. Without fast action, traders can be left out in the cold. There is no time for analysis, and only a split second, at best, to act. As volume drops dramatically, trading is hindered by a crisis. Prices dry out quickly, and sometimes the spreads between bid and offer jump from 5 pips to 100 pips.

6.3 Foreign Exchange Risk Exposure

The foreign exchange market consists of the spot market and the forward or futures market. The spot market deals with foreign exchange delivered within 2 business days or less. Transactions in the spot market quote rates of exchange prevalent at the time the transactional took place. Typically, a bank will quote a rate at which it is willing to buy the currency (bid rate) and a rate at which it will sell a currency (offer rate) for delivery of the particular currency. The forward market is for foreign exchange to be delivered in 3 days or more. In quoting the forward rate of currency, a bank will quote a bid and offer rate for delivery typically one, two, three or six months after the transaction date.

Exchange rates are considered by MNCs as a crucially important factor affecting their profitability. This is because exchange rate fluctuations directly impact the sales revenue of firms exporting goods and services. Future payments in a foreign currency carry the risk that the foreign currency will depreciate in value before the foreign currency payment is received and is exchanged into Indian rupees.

Thus, exchange risk is the effect that unexpected exchange rate changes have on the value of the firm. Foreign exchange risks therefore pose one of the greatest challenge to MNCs. The present unit deals with the management of foreign exchange risk and based on the nature of the exposure and the firm's ability to forecast currencies, what hedging or exchange risk management strategy should the firm employ.

6.3.1 Exchange Risk

Foreign exchange risk is the possibility of a gain or loss to a firm that occurs due to unanticipated changes in exchange rate. For example, if an Indian firm imports goods and pays in foreign currency (say dollars), its outflow is in dollars, thus it is exposed to foreign exchange risk. If the value of the foreign currency rises (i.e., the dollar appreciates), the Indian firm has to pay more domestic currency to get the required amount of foreign currency.

The advent of the floating exchange rate regime, since the early 1970s, has heightened the interest of MNCs in developing techniques and strategies for foreign exchange exposure management. The primary goal is to protect corporate profits from the negative impact of exchange rate fluctuations. However, the goals and techniques of management vary depending on whether the focus is on accounting exposure or economic exposure.

Foreign exchange risks, therefore, pose one of the greatest challenges to a multinational company. These risks arise because multinational corporations operate in multiple currencies. In fact, many times firms who have a diversified portfolio find that the negative effect of exchange rate changes on one currency are offset by gains in others i.e. – exchange risk is diversifiable.

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6.3.2 Types of Exposure

There are mainly three types of foreign exchange exposures:

Translation Exposure

It is the degree to which a firm's foreign currency denominated financial statements are affected by exchange rate changes. All financial statements of a foreign subsidiary have to be translated into the home currency for the purpose of finalizing the accounts for any given period.

If a firm has subsidiaries in many countries, the fluctuations in exchange rate will make the assets valuation different in different periods. The changes in asset valuation due to fluctuations in exchange rate will affect the group's asset, capital structure ratios, profitability ratios, solvency ratios, etc.

FASB 52 specifies that US firms with foreign operations should provide information disclosing effects of foreign exchange rate changes on the enterprise consolidated financial statements and equity. The following procedure has been followed:

- Assets and liabilities are to be translated at the current rate that is the rate prevailing at the time of preparation of consolidated statements.
- All revenues and expenses are to be translated at the actual exchange rates prevailing on the date of transactions. For items occurring numerous times weighted averages for exchange rates can be used.
- Translation adjustments (gains or losses) are not to be charged to the net income of the reporting company. Instead these adjustments are accumulated and reported in a separate account shown in the shareholders equity section of the balance sheet, where they remain until the equity is disposed off.

Measurement of Translation Exposure

Translation exposure = (Exposed assets – Exposed liabilities) (change in the exchange rate)

Example: Current exchange rate

$1 = ₹ 47.10

Assets	**Liabilities**
₹ 15,300,000	₹ 15,300,000
$ 3,24,841	$ 3,24,841

In the next period, the exchange rate fluctuates to $1 = ₹ 47.50

Assets	**Liabilities**
₹ 15,300,000	₹ 15,300,000
$ 3,22,105	$ 3,22,105

Decrease in Book Value of the assets is $ 2736

The various steps involved in measuring translation exposure are:

- First, Determine functional currency.
- Second, Translate using temporal method recording gains/losses in the income statement as realized.

Notes

- Third, Translate using current method recording gains/losses in the balance sheet and as realized.
- Finally, consolidate into parent company financial statements.

Transaction Exposure

This exposure refers to the extent to which the future value of firm's domestic cash flow is affected by exchange rate fluctuations. It arises from the possibility of incurring foreign exchange gains or losses on transaction already entered into and denominated in a foreign currency.

The degree of transaction exposure depends on the extent to which a firm's transactions are in foreign currency.

Example: The transaction in exposure will be more if the firm has more transactions in foreign currency.

According to FASB 52 all transaction gains and losses should be accounted for and included in the equity's net income for the reporting period. Unlike translation gains and loses which require only a bookkeeping adjustment, transaction gains and losses are realised as soon as exchange rate changes.

The exposure could be interpreted either from the standpoint of the affiliate or the parent company. An entity cannot have an exposure in the currency in which its transactions are measured.

Caselet

Transaction Exposure – NHS Computers

The Exposure Problem

An Indian company, NHS Computers is involved in manufacturing of computer machines and spare parts. It imports raw materials from USA and exports the machinery to USA and receives the income in dollars. Machinery has to be imported on regular basis. As per the definition of exposure, NHS Computers is exposed to currency risk. In this case, the company is importing raw materials for which it is paying the money in dollars and while exporting it is receiving the money in dollars. It is exposed to currency risk in the form of transaction exposure, i.e. Dollar/Rupee exchange rate risk is prevalent only between the period when it needs to pay for its imports and when it realizes the dollars for its exports and the difference between the two amounts.

Thus, a company is exposed to currency risk when exchange rate movements directly affect its cash flows. It is equally important for the company to know the types of risk it is exposed to and the origins of risk.

The Environment

In the Indian context, let us assume that all the restrictions related to imports and exports have been removed by the Government of India. Suppose a company is involved in the manufacturing of electronic goods with indigenous technology and is selling the products in India. It has no dealing whatsoever with any other countries. It is getting threatened by an American firm, which is selling the same goods with a lesser price and superior technological features. The company in this case is again exposed to the Dollar/Rupee exchange rate inspite of not having any exposure whatsoever in foreign currencies.

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The Solution

In the above example, if it were a British firm, the extent of Indian firm's exposure is dependent on Dollar/Pound exchange rate and Dollar/Rupee exchange rate. The company should first establish direct linkages between direct movements and cash flow destabilization before it attempts to control currency risks. In this case, the Indian firm has exposure because of its structural nature. It will be exposed to this risk as long as it is in the manufacturing of the products which it is presently involved in. If it changes the existing product mix it can eliminate the risk arising out of the Dollar/Rupee and Dollar/Pound exchange rates on its cash flows. Structural risk is a recurring one and is long term in nature. A long-term risk can be broken into slices and can be controlled temporarily but it will not give a permanent solution.

Source: *International Financial Management*, Madhu Vij, Excel Books.

Economic Exposure

Economic exposure refers to the degree to which a firm's present value of future cash flows can be influenced by exchange rate fluctuations. Economic exposure is a more managerial concept than an accounting concept. A company can have an economic exposure to say Pound/Rupee rates even if it does not have any transaction or translation exposure in the British currency. This situation would arise when the company's competitors are using British imports. If the Pound weakens, the company loses its competitiveness (or vice versa if the Pound becomes strong).

Thus, economic exposure to an exchange rate is the risk that a variation in the rate will affect the company's competitive position in the market and hence its profits. Further, economic exposure affects the profitability of the company over a longer time span than transaction or translation exposure.

Caution Under the Indian exchange control, economic exposure cannot be hedged while both transaction and translation exposure can be hedged.

Self Assessment

State whether the following statements are true or false:

11. The degree of translation exposure depends on the extent to which a firm's transactions are in foreign currency.
12. Economic exposure refers to the degree to which a firm's present value of future cash flows can be influenced by exchange rate fluctuations.

Task Conduct a survey of CEOs of MNCs based in India to assess if they have an understanding of the difference between transaction, translation and economic exposure. The questionnaire should be framed to assess the following:

1. What is their perception of the kinds of exposure?
2. Extent to which firms covered themselves against the three kinds of exposures.
3. Do they give the same importance to the three kinds of exposure?

6.4 Tools and Techniques of Foreign Exchange Risk Management

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The most frequently used financial instruments by companies in India and abroad for hedging the exchange risk are discussed below. These instruments are available at varying costs to the company. Two criterions have been used to contrast the different tools. First, there are different tools that serve practically the same purpose differing only in details like default risk or transaction cost or some fundamental market imperfection. Second, different tools hedge different kinds of risk.

1. ***Forward Contracts:*** A forward contract is one where a counterparty agrees to exchange a specified currency at an agreed price for delivery on a fixed maturity date. Forward contracts are one of the most common means of hedging transactions in foreign currencies.

   In a forward contract, while the amount of the transaction, the value data, the payments procedure and the exchange rate are all determined in advance, no exchange of money takes place until the actual settlement date. For example, an Indian company having a liability in US dollars due in December end may buy US dollars today for the maturity date (December end). By doing so, the company has effectively locked itself into a rate. A forward contract for a customer involves a spot and a swap transaction, as the customer cannot cover the transaction outright for the forward data. This is because the market quotes only spot transactions on an outright basis. In the example given above, the customer (or the company) will have to first buy US dollars in the spot market and then enter into a swap where he sells spot and buys forward (December end).

   The problem with forward contracts however, is that since they require future performance, sometimes one party may be unable to perform the contract. Also, many times forward rate contracts are inaccessible for many small businesses. Banks often tend to quote unfavorable rates for smaller business because the bank bears the risk of the company defaulting in the payments. In such situations, futures may be more suitable.

2. ***Futures Contracts:*** Futures is the same as a forward contract except that it is standardized in terms of contract size is traded on future exchanges and is settled daily. In practice, futures differ from forwards in three important ways.

   First, forwards could be for any amount while futures are for standard amount with each contract being much smaller than the average forward transaction. Also, futures are also standardized in terms of delivery dates while forwards are agreements that can specify any delivery date that the parties choose. Second, forwards are traded by phone and letters while futures are traded in organized exchanges, such as SIMEX in Singapore, IMM in Chicago. Third, in a forward contract, transfer of funds takes place only once – i.e. at maturity while in a futures contract, cash transactions take place practically every day during the life of the contract. Thus, the default risk is largely avoided in a futures contract.

   Despite the above mentioned advantages, futures contract also entails some limitations. Since the futures trade only in standardized amounts, flexibility is missing and thus the hedges are not always perfect. Also, many big companies tend to prefer futures because of their adaptability.

3. ***Option Contract:*** An option contract is one where the customer has the right but not the obligation to contract on maturity date. Options have an advantage as compared to forward contracts as the customer has no obligation to exercise the option in case it is not in his favour.

   An option can be a call or a put option. A call option is the right to buy the underlying asset whereas a put is the right to sell the underlying asset at the agreed strike price. For the purchase of an option, a customer will have to pay a premium. Likewise, the seller of the

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option receives premium. The option premium depends on the strike price, the maturity date, current spot rate and the volatility.

For example, a customer having a liability in Euro with a view that the Euro/USD rate will be higher on maturity date will buy an Euro call. On the maturity date, he has the option to buy the Euro at the strike price or buy it from the market in case it is cheaper.

If the customer buys a Call Option with a strike price at 0.9000 and on maturity date, the rate is 0.8700, the customer has the right to exercise the option. Since in the example cited, it would be cheaper for the customer to by the Euro from the market, the customer will not exercise the option.

There are various structures available in the option market and the more frequently used ones are the Vanilla Options-structures with Knock In and Knock Out structures, Forward Extras, Range Forwards.

4. ***Currency Swap:*** A currency swap is defined as an agreement where two parties exchange a series of cash flows in one currency for a series of cash flows in another currency, at agreed intervals over an agreed period. Typically, a corporate would want to do such a swap if it wants to convert its liabilities in a particular currency to that of another currency.

   For example, U.S. corporate needs German Marks to fund a construction project in Germany. The company chooses to issue a fixed rate bond in dollars and convert them to German Marks. The company takes the dollars received from the issue of the dollar denominated bond and pays them up front to a swap dealer who pays a certain amount of Marks to the firm. Interest payments on the dollar denominated bond are paid in dollars. At the same time, the firm pays an agreed-upon amount of German Marks to the swap dealer and receives dollars in exchange. The dollars received from the swap dealer offset the payment of the dollar coupon interest. Upon maturity, the firm pays its bondholders in dollars and receives an equivalent amount of dollars from the swap dealer to which it paid an agreed-upon amount of Marks. In effect, the company has converted its Dollar denominated loan into a Mark denominated loan.

The most popular instrument used to hedge are forward exchange contracts in India. Although in the more developed markets, options and derivatives are used to a larger extent. Forward contracts are more popular for the following reasons:

1. Forward exchange markets are well established and transparent.
2. Forward contracts are accessible even by the smaller corporates. There are few corporates in the country who have volumes which are tradeable in the option and derivative markets.
3. Many corporate policies do not allow them to trade in options and derivatives. This is because these instruments are perceived to be risky and expensive. Options are relatively new to the Indian market. There is also a lack of product knowledge. Hence, many corporates are not too comfortable while dealing with options.

6.4.1 Market Imperfections/Inefficiencies that Characterize the Indian Markets for these Instruments

Inefficiencies in the Indian market for foreign exchange, option and derivatives can be enumerated as follows:

1. The Indian foreign exchange market is monitored and regulated by the Reserve Bank of India. In most developed financial markets, the intervention by means regulation in the financial markets is extremely low. At times of this prevents the markets from adjusting itself to reflect the true demand/supply mismatch and also leads to a lot of uncertainty amongst the market participants.

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2. On a daily basis, there are huge volumes settled between two counterparties. In the developed markets, this settlement is done on a net basis unlike India. This firstly leads to additional counterparty limits for the banks and also leads to problems in settlement.

Also, there are a number of regulations which act as impediments to the growth of options and derivatives: USD/INR options are prohibited in India as per RBI Regulations. The market in India does not allow a customer to be a net receiver of premium on options. Thus a customer cannot write an option in isolation or do any option structure where he is a net receiver of premium. No swap structure involving upfront payment of rupees in any form which is tantamount to prepayment of external commercial borrowings can be undertaken. Derivative transactions which involve swap transactions can be undertaken by banks purely as intermediaries by fully matching the requirements of corporate counterparties. Finding fully matched corporate is not always possible and this has acted as a hindrance to the growth of the derivatives market. In case the foreign exchange market has to be accessed to cover currency risk, the access is restricted to amount specified by the Reserve Bank. Any further access can be made to the extent swaps undertaken by accessing the market are matched by opposite corporate interest.

Task Do firms have clearly outlined guidelines on exposure management?

Self Assessment

Fill in the blanks:

13. Forward contracts are one of the most common means of …… transactions in foreign currencies.

14. An …… contract is one where the customer has the right but not the obligation to contract on maturity date.

15. A currency …… is defined as an agreement where two parties exchange a series of cash flows in one currency for a series of cash flows in another currency, at agreed intervals over an agreed period.

Case Study

How BMW Dealt with Exchange Rate Risk

BMW Group, owner of the BMW, Mini and Rolls-Royce brands, has been based in Munich since its founding in 1916. But by 2011, only 17 per cent of the cars it sold were bought in Germany. In recent years, China has become BMW's fastest-growing market, accounting for 14 per cent of BMW's global sales volume in 2011. India, Russia and Eastern Europe have also become key markets.

The Challenge

Despite rising sales revenues, BMW was conscious that its profits were often severely eroded by changes in exchange rates. The company's own calculations in its annual reports suggest that the negative effect of exchange rates totalled 2.4bn between 2005 and 2009.

BMW did not want to pass on its exchange rate costs to consumers through price increases. Its rival Porsche had done this at the end of the 1980s in the US and sales had plunged.

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The Strategy

BMW took a two-pronged approach to managing its foreign exchange exposure.

One strategy was to use a "natural hedge" - meaning it would develop ways to spend money in the same currency as where sales were taking place, meaning revenues would also be in the local currency.

However, not all exposure could be offset in this way, so BMW decided it would also use formal financial hedges. To achieve this, BMW set up regional treasury centres in the US, the UK and Singapore.

How the strategy was implemented. The natural hedge strategy was implemented in two ways. The first involved establishing factories in the markets where it sold its products; the second involved making more purchases denominated in the currencies of its main markets.

BMW now has production facilities for cars and components in 13 countries. In 2000, its overseas production volume accounted for 20 per cent of the total. By 2011, it had risen to 44 per cent.

In the 1990s, BMW had become one of the first premium carmakers from overseas to set up a plant in the US - in Spartanburg, South Carolina. In 2008, BMW announced it was investing $750m to expand its Spartanburg plant. This would create 5,000 jobs in the US while cutting 8,100 jobs in Germany.

This also had the effect of shortening the supply chain between Germany and the US market.

The company boosted its purchasing in US dollars generally, especially in the North American Free Trade Agreement region. Its office in Mexico City made $615m of purchases of Mexican auto parts in 2009, expected to rise significantly in following years.

A joint venture with Brilliance China Automotive was set up in Shenyang, China, where half the BMW cars for sale in the country are now manufactured. The carmaker also set up a local office to help its group purchasing department to select competitive suppliers in China. By the end of 2009, Rmb6bn worth of purchases were from local suppliers. Again, this had the effect of shortening supply chains and improving customer service.

At the end of 2010, BMW announced it would invest 1.8bn rupees in its production plant in Chennai, India, and increase production capacity in India from 6,000 to 10,000 units. It also announced plans to increase production in Kaliningrad, Russia.

Meanwhile, the overseas regional treasury centres were instructed to review the exchange rate exposure in their regions on a weekly basis and report it to a group treasurer, part of the group finance operation, in Munich. The group treasurer team then consolidates risk figures globally and recommends actions to mitigate foreign exchange risk.

The Lesson

By moving production to foreign markets the company not only reduces its foreign exchange exposure but also benefits from being close to its customers.

In addition, sourcing parts overseas, and therefore closer to its foreign markets, also helps to diversify supply chain risks.

Questions

1. Discuss the challenge faced by BMW.
2. What was the two-pronged approach that BMW took to manage its foreign exchange exposure?

Source: http://www.ft.com/intl/cms/s/0/f21b3a92-f907-11e1-8d92-00144feabdc0.html#axzz2cDdo7Djf

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6.5 Summary

- The foreign exchange business is, by its nature risky because it deals primarily in risk – measuring it, pricing it, accepting it when appropriate and managing it. The success of a bank or other institution trading in the foreign exchange market depends critically on how well it assesses, prices, and manage risk, and on its ability to limit losses from particular transactions and to keep its overall exposure controlled.
- Managing foreign exchange risk is a fundamental component in the safe and sound management of companies that have exposures in foreign currencies. It involves prudently managing foreign currency positions in order to control, within set parameters, the impact of changes in exchange rates on the financial position of the company. The frequency and direction of rate changes, the extent of the foreign currency exposure and the ability of counterparties to honour their obligations to the company are significant factors in foreign exchange risk management.
- There are mainly three type of foreign exchange exposure - translation exposure, transaction exposure and economic exposure. Transaction exposure refers to the degree to which a firm's foreign currency denominated financial statements are affected by exchange rate changes. It is also known as accounting exposure. Transaction exposure refers to the extent to which the future value of a firm's domestic cash flow is affected by exchange rate fluctuations. Economic exposure, which is more a managerial concept, refers to the degree to which a firm's present value of future cash flows can be influenced by exchange rate fluctuations.
- Forwards, futures, option and swaps are important tools to manage foreign exchange risk.
- Forwards and futures are agreement in which one business agrees to buy from or sell to another business a determined quantity of an underlying asset (real or financial), at a specified future date and at a set price. Two parties mutually agree on a forward contract, according to their needs. Futures are standardised contracts traded on an exchange by brokers.
- Options grant the holder the privilege or right to buy or sell an underlying asset, at a stated price, during a specified period or at a set date.
- With swaps, two parties (one of which is usually a financial institution) agree to exchange their loan or currency payments during a specified period.

6.6 Keywords

Capacity Utilization: Capacity utilization consists of total industrial output divided by total production capability. The term refers to the maximum level of output a plant can generate under normal business conditions.

Consumer Price Index: Consumer price index reflects the average change in retail prices for a fixed market basket of goods and services.

Durable Goods: Durable goods orders consist of products with a life span of more than three years.

Gross Domestic Product (GDP): The Gross Domestic Product (GDP) refers to the sum of all goods and services produced in the country, either by domestic or foreign companies.

Gross Domestic Product Implicit Deflator: Gross domestic product implicit deflator is calculated by dividing the current dollar GDP figure by the constant dollar GDP figure.

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Gross National Product Implicit Deflator: Gross national product implicit deflator is calculated by dividing the current dollar GNP figure by the constant dollar GNP figure.

Personal Income: Personal income is the income received by individuals, nonprofit institutions, and private trust funds.

Producer Price Index: Producer price index is compiled from most sectors of the economy, such as manufacturing, mining, and agriculture. The sample used to calculate the index contains about 3400 commodities.

6.7 Review Questions

1. What is exchange risk? How can it be managed?
2. Briefly discuss the three kinds of Exposures. Give examples to illustrate each.
3. Distinguish between a forward and a futures contract. Which of the two is more popular? Why?
4. Discuss the frequently used financial instruments by companies in India and abroad for hedging exchange rate risk.
5. What do you understand by 'Currency Correlation' and 'Currency Volatility'? Give examples to illustrate your answer.
6. Why are forward contracts popular?
7. Distinguish between transaction and economic Exposure. Give examples to elucidate your answer.
8. Discuss the market imperfections for derivatives that characterize the Indian Markets.
9. Discuss the four steps in measuring translation exposure.

Answers: Self Assessment

1.	Economic	2.	Gross National Product
3.	Gross Domestic Product (GDP)	4.	Industrial
5.	Maximum	6.	Factory
7.	Three	8.	Consumer price index
9.	Gross national product	10.	21
11.	False	12.	True
13.	Hedging	14.	Option
15.	swap		

6.8 Further Readings

Notes

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Unit 7: Management of Transaction Exposure

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Objectives

After studying this unit, you will be able to:

- Explain the measurement of transaction exposure
- Discuss the transaction exposure depending on currency variability
- Describe how to manage transaction exposure
- Discuss the risk management products
- Explain the currency volatility over time

Introduction

A transaction exposure arises whenever a company is committed to a foreign currency denominated transaction entered into before the change in exchange rate. Transaction exposure measures the effect of an exchange rate change on outstanding obligations which existed before the change, but were settled after the exchange rate change. Transaction exposure, thus, deals with changes in cash flows that result from existing contractual obligation due to exchange rate changes.

Transaction risk is critical to an MNC due to the high variability in exchange rates. Further, in view of the fact that firms are now more frequently entering into financial and commercial

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contracts denominated in foreign currencies, judicious measurement and management of transaction exposure has become an important function of international financial management.

7.1 Measurement of Transaction Exposure

Transaction exposure measures gains or losses that arise from the settlement of existing financial obligation whose terms are stated in a foreign currency. Two steps are involved in measuring transactions exposure:

1. Determine the projected net amount of currency inflows or outflows in each foreign currency; and
2. Determine the overall exposure to those currencies.

The first step in transaction exposure is the projection of the consolidated net amount of currency inflows or outflows for all subsidiaries, classified by currency subsidiary. Subsidiary A may have net inflows of $6,00,000 while subsidiary B may have net outflows of $7,00,000. The consolidated net inflows here would be – $1,00,000. If the other currency depreciates, subsidiary A will be adversely affected while subsidiary B will be favourably affected. The net effect of the dollars depreciation on the MNC is minor since an offsetting effect takes place. It could have been substantial if most subsidiaries of the MNC had future inflows of US dollars. Thus, while assessing the MNCs exposure, it is advisable, as a first step, to determine the MNC's overall position in each currency.

However, in case of a non-centralised approach each subsidiary acts independently and assesses and manages its individual exposure to exchange rate risk. Such an approach gives important responsibilities to each subsidiary to plan out its future strategy in accordance with currency movements.

Example: Consider a US based MNC. All inflows and outflows for each currency are combined to determine the "net" position in that currency. The MNC then uses the range of possible exchange rates to the number of units of each currency to determine a possible range of its local currency inflows or outflows related to each foreign currency.

Currency	Net Inflow or Outflow	Range of expected exchange rates	Range of possible net inflow or outflow in US dollars (based on range of possible exchange rates)
French francs	FFr 20,000,000 (inflow)	$ .12 to $ .14	$ 2,400,000 to $ 2,800,000 (inflow)
Swiss francs	SFr 10,000,000 (outflow)	$ .60 to $.64	$ 6,000,000 to $ 6,400,000 (outflow)
German francs CDM	DM 5,000,000 (outflow)	$ .50 to $.53	$ 2,500,000 to $ 2,650,000 (outflow)
Canadian dollars	C$ 8,000,000 (inflow)	$ .85 to $ .88	$6,800,000 to $ 7,040,000 (inflow)

The first row shows that the MNC has a net inflow of FFr 20,000,000. Based on an expected exchange rate ranging from $.12 to $.14, the range of possible net inflows are $2,400,000 to $2,800,000 (20,000,000 × .12 = $2,400,000 and 20,000,000 × .14 = $2,800,000). Similarly, the range of possible net inflow/outflow for each currency in US dollars can be calculated. The respective calculations are shown in the last column.

Did u know? The important point is that a firm's transaction exposure in any foreign currency is not only based on the size of its open position but also on the range of possible exchange rates that are expected in each currency.

Notes

In the above illustration, the net inflows and outflows in each currency were certain whereas the exchange rates at the end of the period were assumed to be uncertain. In reality, both the net inflow/outflow as well as the exchange rates could be uncertain. If this is so the measurement of exposure in each currency would be more complex as now even the second column would be a range. Techniques like sensitivity analysis or simulation could be used to generate a set of possible estimates for exposures in each currency.

Self Assessment

State whether the following statements are true or false:

1. Transaction risk is critical to an MNC due to the high variability in exchange rates.
2. Transaction exposure measures only gains that arise from the settlement of existing financial obligation.

7.2 Transaction Exposure based on Currency Variability

The expected range of possible exchange rates for each currency was assumed to be given in the earlier example. In actual practice, MNCs have their own method for developing exchange rate projections. Various methods can be used by MNCs to predict future currency values.

For example, MNC's can use the historical data for the past few years to assess the expected movement for each currency. The standard deviation method is also used very frequently to measure the degree of movement for each particular currency. The idea here is to assess and broadly identify some currencies which fluctuate more widely than others.

For example, during the period 1974–1989, it was found that the German mark had a standard deviation of about 6 per cent, Canadian dollar of approximately 2 per cent, British pound and French franc of approximately 5 per cent. Based on the above information, a US based MNC may feel that an open asset or liability position in Canadian dollars is not as problematic as an open position in other currencies.

Self Assessment

Fill in the blank:

3. Various methods can be used by MNCs to predict …… values.

7.3 Managing Transaction Exposure

The various methods available to a firm to hedge its transaction exposure are discussed below:

7.3.1 Forward Market Hedge

In a Forward Market Hedge, a company that is long in a foreign currency will sell the foreign currency forward, whereas a company that is short in a foreign currency will buy the currency forward. In this way, the company can fix the dollar value of future foreign currency cash flow.

If funds to fulfil the forward contract are available on hand or are due to be received by the business, the hedge is considered "covered," "perfect or "square" because no residual foreign exchange risk exists. Funds on hand or to be received are matched by funds to be paid.

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In situations where funds to fulfil the contract are not available but have to be purchased in the spot market at some future date, such a hedge is considered to be "open" or "uncovered". It involves considerable risk as the hedger purchases foreign exchange at an uncertain future spot rate in order to fulfil the forward contract.

7.3.2 Money Market Hedge

A Money Market Hedge involves simultaneous borrowing and lending activities in two different currencies to lock in the home currency value of a future foreign currency cash flow. The simultaneous borrowing and lending activities enable a company to create a home-made forward contract.

The firm seeking the money market hedge borrows in one currency and exchanges the proceeds for another currency. If the funds to repay the loan are generated from business operation then the money market hedge is covered. Otherwise, if the funds to repay the loan are purchased in the foreign exchange spot market then the money market hedge is uncovered or open.

Suppose that on January 1, GE is awarded a contract to supply turbine blades to Lufthansa, the German airline. On December 31, GE will receive payment of DM 25 million for this contract. Further, suppose that DM and US $ interest rates are 15% and 10% respectively. Using a money market hedge, GE will borrow DM 25/1.15 million = DM 21.74 million for one year, convert it into $8.7 million in the spot market (spot exchange rate is DM 1 = $0.40) and invest them for one year. On December 31, GE will receive 1.10 × $8.7 million = $9.57 million from its dollar investment. GE will use these dollars to pay back the 1.15 × DM 21.74 million = DM 25 million it owes in interest and principal.

7.3.3 Options Market Hedge

In many circumstances, the firm is uncertain whether the hedged foreign currency cash inflow or outflow will materialise. Currency options obviate this problem.

There are two kinds of options – put options and call options.

A put option gives the buyer the right, but not the obligation, to sell a specified number of foreign currency units to the option seller at a fixed price up to the option's expiration date.

Alternatively, a call option is the right, but not the obligation, to buy a foreign currency at a specified price, upto the expiration date.

A call option is valuable, for example, when a firm has offered to buy a foreign asset, such as another firm, at a fixed foreign currency price but is uncertain whether its bid will be accepted.

The general rules to follow when choosing between currency options and forward contracts for hedging purposes are summarised as follows:

1. When the quantity of a foreign currency cash outflow is known, buy the currency forward, when the quantity is unknown, buy a call option on the currency.
2. When the quantity of a foreign currency cash inflow is known, sell the currency forward, when the quantity is unknown, buy a put option on the currency.
3. When the quantity of foreign currency cash flow is partially known and partially uncertain, use a forward contract to hedge the known portion and an option to hedge the maximum value of the uncertain remainder.

Notes

7.3.4 Exposure Netting

Exposure netting involves offsetting exposures in one currency with exposures in the same or another currency, where exchange rates are expected to move in such a way that losses (gains) on the first exposed position should be offset by gains (losses) on the second currency exposure.

The assumption underlying exposure netting is that the net gain or loss on the entire exposure portfolio is what matters, rather than the gain or loss on any individual monetary unit.

The above mentioned methods show how a firm can hedge exchange exposures if it wishes. The next question therefore is – should a firm try to hedge to start with? Based on literature survey there is no consensus on whether the a should hedge or not. Some writers argue that transaction exposure management at the organisational level is not required and that shareholders can manage the exposure themselves. The various reasons in favour of exposure management at the corporate level are:

1. ***Information asymmetry:*** Management is aware about the firm's exposure position much better than shareholders. Thus, management of the firm should manage exchange exposure.
2. ***Transaction costs:*** The firm is in a better position to acquire low cost hedges and hence, transaction costs can be significantly reduced. For individual shareholders, the transactions costs can be substantial.
3. ***Default cost:*** In a corporate hedging, probability of default is significantly lower. This, in turn, can lead to a better credit rating and lower financing costs.

Self Assessment

Fill in the blanks:

4. A Money Market Hedge involves simultaneous …… activities in two different currencies.
5. Options are used to …….
6. Exposure netting involves …… in one currency with exposures in the same or another currency.
7. In a corporate hedging, probability of default is significantly …….
8. In a Forward Market Hedge, a company that is long in a foreign currency will …… the foreign currency forward.
9. A company that is short in a foreign currency will …… the currency forward.
10. The firm seeking the money market hedge borrows in one currency and …… the proceeds for another currency.

7.4 Risk Management Products

In a survey, Jesswein, Kwok and Folks documented the extent of knowledge and use of foreign exchange risk management products by US corporations. Based on a survey of Fortune 500 firms, they found that the traditional forward contract is the most popular product. As shown below, about 93 per cent of respondents of the survey used forward contracts. This old, traditional instrument has not been supplemented by recent 'fancy' innovations. The next commonly used instruments were foreign currency swaps (52.6 per cent) and over-the-counter currency options

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(48.8 per cent). Such recent innovations as compound options (3.8 per cent) and lookback options (5.1 per cent) were among the least extensively used instruments. These findings seem to indicate that most US firms meet their exchange risk management needs with forward, swap and options contracts.

Table 7.1: Risk Management Products

Type of Product	Heard of (Awareness)	Used (Adoption)
Forward contracts	100.%	93.1%
Foreign currency swaps	98.8	52.6
Foreign currency futures	98.8	20.1
Exchange traded currency options	96.4	17.3
Exchange traded futures options	95.8	8.9
Over-the-counter currency options	93.5	48.8
Cylinder options	91.2	28.7
Synthetic forwards	88.0	22.0
Synthetic options	88.0	18.6
Participating forwards, etc.	83.6	15.8
Forward exchange agreements, etc.	81.7	14.8
Foreign currency warrants	77.7	4.2
Break forwards, etc.	65.3	4.9
Compound options	55.8	3.8
Lookback options, etc.	52.1	5.1
Average across products	84.4%	23.9%

Source: Kurt Jesswein, Chuck Kwok, and William Folks, Jr, "Corporate Use of Innovative Foreign Exchange Risk Management Products," *Columbia Journal of World Business*.

The Jesswein, Kwok, and Folks survey also shows that, among the various industries, the finance/insurance/real estate industry stands out as the most frequent user of exchange risk management products. This finding is not surprising. This industry has more finance experts who are skillful at using derivative securities. In addition, this industry handles mainly financial assets which tend to be exposed to exchange risk. The survey further shows that the corporate use of foreign exchange risk management products is positively related to the firm's degree of international involvement. This finding is not surprising either. As the firm becomes more internationalised through cross-border trade and investments, it is likely to handle an increasing amount of foreign currencies, giving rise to a greater demand for exchange risk hedging.

7.4.1 Currency Correlation and Variability as Hedging Tools

The degree of simultaneous movements of two or more currencies with respect to some base currency is explained by currency correlations. The correlations among currency movements can be measured by their correlation coefficient which indicates the degree to which two currencies move in relation to each other. This information can be used by MNCs not only when deciding on their degree of transaction exposure but also in the determination of movement of exchange rate of foreign currencies. In analyzing the concept of currency correlation, MNC's keep in mind that currency correlation are not constant over time and that they cannot use previous correlation to predict future correlation with perfect accuracy. While temporary shocks/disturbances in an economy may cause an appreciation or depreciation of a specific currency without there being

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a corresponding and simultaneous effect on other currencies, it is assumed that in the long run the factors will remain more or less stable. Thus, correlation among currencies can be expected to be a good indicator of movement of exchange rates in respect of other foreign currencies.

Notes The concept of currency correlation can also be used to hedge transaction exposure in some cases.

For example, if a MNC has cash inflows in one currency (say Deutschemark) and cash outflows in a closely correlated currency like Swiss franc, the loss/gain on cash outflow due to an appreciation/depreciation of the Swiss franc vis-à-vis the MNC's home currency will be offset to a certain extent by the gain/loss on the cash inflow due to the appreciation/depreciation of the Deutschemark. Thus, if the MNCs expect that these two currencies will move in the same direction and by nearly the same degree in the next period, the exposures to these two currencies are partially offset. Such offset of one exposure against another in a closely related currency provides a natural hedge. The currency correlation between EUR/USD is given in Table 7.2.

Table 7.2: EUR/USD Correlation Values

		EUR /USD								
period	EUR/USD	AUD /USD	EUR /CHF	EUR /GBP	EUR /JPY	GBP /USD	NZD /USD	USD /CAD	USD /CHF	USD /JPY
1 Week	1	0.65	-0.16	0.31	-0.04	0.54	0.43	-0.47	-0.69	-0.51
1 Month	1	0.93	0.79	-0.07	0.97	0.84	0.83	-0.95	-0.98	-0.7
1 Year	1	0.48	-0.21	0.77	0.83	0.4	0.73	-0.37	-0.96	0.65

Task Calculate the currency correlation among the Asian currencies for the last 5 years. You could calculate both the long-term and short-term correlation for the Asian currencies being examined.

Self Assessment

State whether the following statements are true or false:

11. Currency correlation is the degree of simultaneous movements of two or more currencies with respect to some base currency.
12. The concept of currency correlation can not be used to hedge transaction exposure.

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Caselet

Team Work Plays Prime Part

Fund managers are becoming increasingly aware that they need to take a view on currency movements as well as on the prospects for bonds and equities.

John Stopford, a portfolio manager at UK fund management group Guinness Flight, is one of a team which looks after the currency exposure of the group plus a range of onshore and offshore currency and bond funds for retail and institutional investors. The team looks after around $1.3bn of assets with a currency overlay.

"We have been managing currencies as a separate asset class from bonds and equities since as far back as 1980s," he says. "That means putting a currency overlay on all our bond and equity funds. What is good for bonds and equities isn't necessarily good for currencies. So just because we have invested in US treasuries doesn't mean we are in dollars to the same extent."

Frequently in recent years, currencies have been moving in the opposite direction from the underlying asset class.

The decisions on currency strategy are taken by the entire team. "For us to have a reasonable amount of success we feel it's important to generate ideas internally," says Mr Stopford.

The team has a disciplined process of quarterly, monthly and weekly meetings, during which it looks at what Mr Stopford calls "Compelling forces – those key factors which we think drive exchange rates over the medium and long-term." Each month the factors are "scored" by the team to help members reach a view on currency prospects.

"In the very long-term, currencies move to offset changes in competitiveness," he says. "Relative prices are important and while purchasing power parity doesn't hold true all the time, it does have an influence." The team also considers other long-term factors such as if a country runs a consistent currency account deficit.

But Mr Stopford says that "in the short-term, currencies can deviate quite a lot from their long-term path." The Guinness Flight team accordingly looks at factors which affect short-term capital flows such as "short-term interest rates, real bond yields, direct investment flows, whether the trade position is worsening or improving and whether central banks are intervening."

Chart patterns or technical analysis can also play a role in determining the team's short-term view as can non-economic factors such as policies. All in all, the scoring process means that, according to Mr Stopford, "we might be wrong about individual factors but on balance, hopefully, the totals are pointing in the right direction."

The process also limits the tendency for managers to become involved in ceaseless dealing activity. "We are strategic investors rather than traders and we add value by taking a long-term view; we can't out-trade the market," says Mr Stopford.

Once the team has decided on its view, the appropriate funds will move in the same direction (and at the same time). "Our dealing will be done using one of a number of city financial institutions. For credit reasons, we spread the risk pretty carefully and we look at pricing and quality of research."

At the start of the year, he says, the currency decisions were relatively easy. Japan and Germany had easy money policies, the Japanese current account was deteriorating and the

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respective authorities were taking down their exchange rates. "That made it smart to be long on dollars and short on yen," says Mr Stopford.

The decisions are harder now, "The US dollar no longer looks that cheap and the DM and yen no longer look that expensive. The Italian lira and the Swedish krona have moved from being undervalued. We remain long of the dollar but we have reduced our positions gradually. We have also reduced positions in peripheral currencies."

Source: *International Financial Management*, Madhu Vij, Excel Books.

7.5 Currency Volatility Over Time

The volatility of a currency is a measure of the change in price over a given time period and will not necessarily remain consistent from one time period to another. The MNCs assessment of a currency's future volatility will not be accurate when a previous time period is used as an indicator since currency volatility levels change over time. However the MNC can benefit significantly from information even though the MNC may not be able to predict a currency's future volatility with perfect accuracy. It can identify currencies like the Canadian dollar or the British pound whose values are most likely to remain stable vis-à-vis highly volatile currencies like the Italian lira or the South Korean won in the near future.

Table 7.3: Volatility in Indian Rupee

			Change %			
Currency	**INR per**	**Per INR**	**1 Day**	**3 Month**	**1 Year**	**HLP1**
Australian dollar	25.038665	0.039938	– 0.13	+4.80	– 5.51	61.2
British pound	68.640693	0.014569	– 0.01	+3.03	+2.98	73.4
Canadian dollar	30.470037	0.032819	– 0.11	– 0.59	– 2.31	49.9
Dutch guilder	19.525347	0.051215	– 0.01	+7.56	+5.44	73.8
Euro	43.028176	0.023241	– 0.01	+7.56	+5.44	73.8
Finnish markka	7.236823	0.138182	– 0.01	+7.56	+5.44	73.8
French franc	6.559606	0.152448	– 0.01	+7.56	+5.44	73.8
German mark	21.999963	0.045455	– 0.01	+7.56	+5.44	73.8
Greek drachma	0.126275	7.919226	– 0.01	+7.56	+4.53	72.9
Hong Kong dollar	6.046309	0.165390	+0.00	+0.26	+2.70	98.0
Italian lira	0.022222	4.000027	– 0.01	+7.56	+5.44	73.8
Japanese yen	0.396803	2.520144	+0..57	+0.76	– 8.11	44.2
Mexican peso	5.121911	0.195240	– 0.20	– 0.49	+2.63	78.8
South Africa rand	5.603113	0.178472	– 0.60	– 4.61	– 16.07	0.0
Spanish peseta	0.258605	3.866906	– 0.01	+7.56	+5.44	72.8
Swedish krona	4.522440	0.221120	– 0.29	4.89	– 7.19	32.8
Swiss franc	28.377159	0.035240	+0.10	+8.06	+7.44	77.8
US dollar	47.160000	0.021204	+0.00	+0.25	+2.71	98.1

Table 7.3 illustrates the movement of a few important currencies with respect to the Indian rupee. It discusses the one day, three month and one year change in the currencies. The percentage change in the value of one foreign currency unit measured in local currency is calculated. A plus sign (+) in front of the value means that the foreign currency has appreciated and hence the local currency has depreciated. If the value is preceded by a minus sign (–), the local currency has appreciated and foreign currency has depreciated.

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High-low Position Index (HLPI) is also shown in Table 7.3. HLPI is an important tool to measure the volatility of currencies and describes the position of the current exchange rate relative to its one year high and low. For example, a value of 0 means that the current value of a given foreign currency measured in local units is the lowest within the past 12 months, whereas 100 indicates that it is the highest. Table 7.3 shows that only three currencies have witnessed large daily movements with respect to the Indian rupee. The Japanese Yen has appreciated by 0.57% while the South African and the Swedish krona have depreciated by – 0.60% and – 0.29% respectively. The movement for 3 months period shows that out of all the currencies South African rand is the most volatile currency. This could probably be due to the fact that South Africa exhibits an unusual combination of sophisticated and a developing economy. The Swiss franc and the basket of European currencies have also appreciated significantly. The US dollar has moved up by only 0.25%. An analysis of the one year data reveals that once again the South African rand is the most volatile and has lost one sixth of its value in the last one year. Apart from this, the Indian rupee has appreciated with respect to only three currencies – Australian dollar (– 5.51%), Japanese yen (– 8.11%) and Swedish krona (– 7.19%). With respect to all other currencies it has depreciated. Overall it can be concluded that the Indian rupee has remained relatively stable in the last one year with respect to most of the currencies in the world and has moved in only single digit percentages with respect to all the currencies except the South African rand.

Assigning Risk Grades to Currencies

Risk grades to currencies have been arrived at after determining their standard deviations. The following formula has been used for arriving at the classification:

$$\frac{\text{Standard Deviation 2000}}{\text{Standard Deviation 1991}} \times 100$$

Here 1991 is our base year for currency fluctuations while 2000 is the most current year. Based on this data on currency variability's, we have assigned risk grades as predictive of currency behaviour.

The grades have been assigned as per the following parameters:

Table 7.4: Risk Rating and Risk Grades

Risk Rating	Risk Grade
1–20%	A+ (Very Low)
21–40%	A (Low)
41–60%	B + (Average)
61–80%	B (Medium)
81–100%	C (High)
101–1000%	D (Very High)
>1000%	E (Extremely High)

An analysis of the risk grades assigned to currencies helps an MNC to ensure better hedging against transaction exposure. Measurement of transaction exposure requires projections of the consolidated net amount in currency inflows or outflows for all subsidiaries, categorised by currency. Estimation of consolidated net cash flows helps the MNC to determine its overall position in each currency. Thus an MNC's overall exposure can be assessed after considering each currency's variability and correlations among currencies.

Notes

Task The concept of currency correlation is often used by MNCs to hedge transaction exposure. Two mechanisms which are generally used by MNCs in covering their transaction exposure are prediction of currency volatilities over time and finding out correlation between currencies in which they are dealing. In this context calculate the correlation and covariance coefficient between the Indian rupee and a few important currencies like dollar, pound, euro, yen, etc.

Self Assessment

State whether the following statements are true or false:

13. Currency volatility will necessarily remain consistent from one time period to another.
14. When small values of one set are associated with large values of the other is negative covariance.
15. Risk grades to currencies have been arrived at after determining their standard deviations.
16. HLPI is an important tool to measure the volatility of currencies.

Case Study

Transaction Exposure – DC Corporation

DC Corporation is a US-based software consulting firm, specialising in financial software for several Fortune 500 clients. It has offices in India, the UK, Europe and Australia. In 2002, DC required £100,000 in 180 days and had four options before it:

- A forward hedge
- A money market hedge
- An option hedge
- No hedge

Its analysts developed the following information which was used to asses the alternative solutions:

- Current spot rate of pound = $ 1.50
- 180-day forward rate of pounds as of today = $ 1.48

Interest rates were as follows:

	U.K	U.S.
180-days deposit rate	4.5%	4.5%
180-days borrowing rate	5.1%	5.1%

The company also had the following information available to it:

- A call option on Pound that expires in 180 days has an exercise price of $ 1.49 and a premium of $ 0.03.

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- A put option on Pound that expires in 180 days has an exercise price of 1.50 and a premium of $ 0.02.

The future spot rates in 180 days were forecasted as follows:

Possible Outcome	Probability
$ 1.44	20%
$ 1.46	60%
$ 1.53	20%

An analysis of hedging techniques which DC corporation considered is given below:

1. ***Forward Hedge***

   Purchase Pounds 180 days forward.

   Dollars needed in 180 days = Payables in £ × Forward rate of £ = 100,000 × $1.48

   = $1,48,000.

2. ***Money Market Hedge***

   Borrow $, Convert to £ Invest in £ Repay $ loan in 180days

   Amount in £ to be invested = £100,000/(1 + 0.045) = 95694

   Amount in $ needed to convert into £ for deposit = £95694 × $1.50 = $143541

   Interest and principal owed on $ loan after 180 days

   = $143541 × (1 + .051) = $150862

3. ***Call Option Hedge:*** Purchase call option (the following computations assume that the option is to be exercised on the day Pounds are needed, or not at all. Exercise price = $1.49, Premium = $0.03).

Possible Spot Rate in 180 days	Premium per Unit Paid for Option	Exercise Option	Total price (Including Option Premium) Paid per Unit	Total Price Paid for £100,000	Probability
$1.44	$0.03	No	$1.47	$1.47,000	20%
$1.46	$0.03	Yes	$1.49	$1,49,000	60%
$1.53	$0.03	Yes	$1.56	$1,56,000	20%

4. ***No Hedging:*** Purchase £100,000 in the spot market 180 days from now.

Future Spot Rate Expected in 180 days	Dollars Needed to Purchase £200,000	Probability
$1.44	1,44,000	20%
$1.46	1,46,000	60%
$1.53	$1,53,000	20%

It can be inferred from the above analysis that the forward hedge is superior to the money market hedge, since the dollar cost is definitely less. A comparison of the forward hedge to the call option hedge shows that there is an 80% chance that the call option hedge will be more expensive. Thus, the forward hedge appears to be the optimal hedge.

The probability distribution outcomes for the no-hedge strategy appears to be more favourable than that for the forward hedge. DC Corporation is likely to perform best if it remains unhedged. If DC Corporation does not hedge, it should periodically reassess the

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hedging decision. For example, after 45 or 60 days, it should repeat the analysis, based on the applicable spot rate, forward rate, interest rates, call option information, and forecasts of the spot rate 120 days in the future (when the payable are due.)

Question

Make suggestion to DC Corporation on their hedging decision. (Hint: After comparing all the available hedging option the forward option is looking better. On the other hand company can go with no hedge strategy. Another option is that company can review the hedging decision in the mid term.

Source: *International Financial Management*, Madhu Vij, Excel Books.

7.6 Summary

- The unit focuses on the measurement and management of transaction exposure.
- Transaction exposure measures gains or losses that arise from the settlement of existing financial obligations whose terms are stated in a foreign currency.
- Transaction exposure can be hedged by financial contracts like forward, money market and option contracts as well as by other operational techniques like lead/lag strategy and exposure netting.
- Transaction exposure measures the effect of an exchange rate change on outstanding obligations which existed before exchange rates changed but were settled after the exchange rate changes.
- Transaction exposure thus deals with changes in cash flows that result from existing contractual obligations.
- This unit analyses how transaction exposure is measured and managed.
- A primary objective of this unit is to provide an overview of hedging techniques.
- Yet, transaction exposure cannot always be hedged in all cases. Even when it can be hedged, the firm must decide whether a hedge is feasible or not; generally firm comes to know whether hedging is worthwhile or not after a certain period of time.

7.7 Keywords

Call Option: Call option is the right, but not the obligation, to buy a foreign currency at a specified price, upto the expiration date.

Currency Correlations: The degree of simultaneous movements of two or more currencies with respect to some base currency.

Currency Volatility: The volatility of a currency is a measure of the change in price over a given time period.

Exposure Netting: Exposure netting involves offsetting exposures in one currency with exposures in the same or another currency, where exchange rates are expected to move in such a way that losses (gains) on the first exposed position should be offset by gains (losses) on the second currency exposure.

Money Market Hedge: A Money Market Hedge involves simultaneous borrowing and lending activities in two different currencies.

Put Option: Put option gives the buyer the right, but not the obligation, to sell a specified number of foreign currency units to the option seller at a fixed price up to the option's expiration date.

Notes

Transaction Exposure: Transaction exposure measures gains or losses that arise from the settlement of existing financial obligation whose terms are stated in a foreign currency.

7.8 Review Questions

1. Define transaction exposure.
2. How is transaction exposure different from accounting exposure?
3. How do you measure transaction exposure? Give example.
4. Elucidate the various techniques to manage transaction exposure.
5. Compare the three kinds of exposure – transactions, translation and economic.
6. Can a company use the hedging techniques to protect itself against expected exchange rate changes? Explain.
7. Is transaction exposure relevant? Elucidate.
8. When can an MNC's subsidiary consider using a "leading" strategy to reduce transaction exposure?
9. 'MNCs with less risk can obtain funds at lower financing costs.' Elucidate with examples.
10. 'Currency correlations are not constant over time – MNC cannot use previous correlations to predict future correlations with perfect accuracy. Do you agree. Illustrate your answer with the help of trend in exchange note movements of various currencies against the dollar.

Answers: Self Assessment

1.	True	2.	False
3.	Future currency	4.	Borrowing and lending
5.	Hedge risks	6.	Offsetting exposures
7.	Lower	8.	Sell
9.	Buy	10.	Exchanges
11.	True	12.	False
13.	False	14.	True
15.	True	16.	True

7.9 Further Readings

Books

Apte, P.G. *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi.

Bhalla, V.K. *International Financial Management*, Anmol Publishers.

Eun/Resnick, *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi.

Shapiro Allan C, *Multinational Financial Management*, Prentice Hall, New Delhi.

Notes

Online links

http://athene.mit.csu.edu.au/~hskoko/subjects/fin340/lect04.pdf

http://cibs.tamu.edu/uploads/gaspar/Ch11e9ManagingTransactionExposure.pdf

http://finance.wharton.upenn.edu/~bodnarg/courses/nbae/IFM/Chapter8.pdf

http://highered.mcgraw-hill.com/sites/dl/free/0070912289/235906/new_chapter_13.pdf

Unit 8: Currency Futures and Currency Options

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Objectives

After studying this unit, you will be able to:

- Explain the concepts of futures
- Discuss the mechanism of future trading
- Elaborate the application of futures
- Describe the currency options
- Discuss the fundamentals of currency options
- Explain the pricing of currency options

Introduction

Foreign currency futures and options are two relatively new instruments that have assumed increasing importance in the marketplace in recent years. It is important to understand the

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background of these markets since firms usually use both currency futures and options to manage the foreign exchange risk or take speculative positions on currency movements. Both futures and options not only gives the investors new speculative opportunities, but also provide new tools for portfolio management and risk control of an existing portfolio. In this unit, we introduce the currency futures market and currency options market and how these contracts can be used to manage the different kinds of risks. We begin with the definition and the various types of futures contract that exist and are traded.

8.1 Concept of Futures

A futures contract represents a contractual agreement to purchase or sell a specified asset in future for a specified price that is determined today. The underlying asset could be a foreign currency, a stock index, a treasury bill or any number of other assets. The specified price is known as the future price. Each contract also specifies the delivery month, which may be nearby or more deferred in time.

The undertaker in a futures market can have two positions in the contract.

(i) Long position when the buyer of a futures contract agrees to purchase the underlying asset.

(ii) Short position when the seller agrees to sell the asset.

Futures contract represents an institutionalised, standardised form of forward contracting. They are traded on an organised exchange which is a physical place or trading floor where listed contracts are traded face to face.

8.1.1 Types of Futures Contracts

Futures contracts that are traded fall into five categories.

(i) ***Agricultural Futures Contracts:*** These contracts are traded in grains, oil and meal, livestock, forest products, textiles and foodstuff. Several different contracts and months for delivery are available for different grades or types of commodities in question. The contract months depend on the seasonality and trading activity.

(ii) ***Metallurgical Futures Contract:*** This category includes genuine metal and petroleum contracts. Among the metals, contracts are traded on gold, silver, platinum and copper. Of the petroleum products, only heating oil, crude oil and gasoline are traded.

(iii) ***Interest Rate Futures Contracts:*** These contracts are traded on treasury bills, notes, bonds, bank certificates of deposit, Eurodollar deposits and single family mortgages.

(iv) ***Foreign Exchange Futures Contracts:*** These contracts are traded in the British pound, the Canadian dollar, the Japanese yen, the Swiss franc, and the deutsche mark. Contracts are also listed on French francs, Dutch guilders and the Mexican peso but these have met with only limited success.

(v) ***Stock Index Futures Contracts:*** These futures contract without actual delivery were introduced only in 1982 and are the most recent major futures contract to emerge. In the United States, these contracts trade on several market indices like Standard and Poor's 500, a major market index, the NYSE Index and the Value Line Index. Numerous contracts on industry indices are now trading as well.

A stock index futures contract is a contract to buy or sell the face value of the underlying stock index where the face value is defined as being the value of index multiplied by the specified monetary amount.

Notes

This device makes it possible to equate the value of the stock index with that of a specific basket of shares with the following specifications:

- The total value of shares must match the monetary value of the index.
- The shares selected must correspond to the set of shares used to create the index.
- The amount of each holding must be in proportion to the market capitalisation of the companies.

Caution The profit or loss from a futures contract that is settled at delivery is the difference between the value of the index at delivery and the value when originally purchased or sold. It is important to emphasize that the delivery at settlement cannot be in the underlying stocks but must be in cash. The futures index at expiration is set equal to the cash index on that day.

8.1.2 Pricing of Stock Index Futures

Unlike an options contract, pricing of a futures contract is easy to understand. The price of the stock index futures is given as:

$$FB = IB + (Rf - D),$$

where

FB = Current futures price

IB = Current index price

Rf = Risk free rate of interest

D = Dividends

(Rf – D) above indicates the cost of carrying an index in future. Thus, if the annualised risk free rate of interest is 13% and the annualised dividend yield is 6%, a futures contract on the index for one year should sell at an annualised 7% (13-6) premium to index, independent of expectations for the market.

Advantages of Using Stock Index Futures

The various advantages of using stock index futures are:

(i) ***Actual Purchases are not Involved:*** Stock index futures permit investment in the stock market without the trouble and expense involved in buying the shares themselves.

(ii) ***There is High Leverage Due to Margin System:*** Operating under a margin system, stock index allows for full participation in market moves without significant commitment of capital. The margin levels may allow leverage of up to 30-40 times.

(iii) ***Lower Transaction Costs:*** The transaction costs are typically many times lower than those for share transactions.

(iv) ***Hedging of Share Portfolio:*** Portfolio managers for large share portfolios can hedge the value of their investment against bear moves without having to sell the shares themselves.

Thus, the changing nature of the futures market has meant new types of market participants. Today, the largest and most prestigious financial institutions like banks, pension funds, insurance companies, mutual funds all around the world use futures and futures markets have become an integral part of how these institutions manage their risks and portfolio of assets.

Notes

Self Assessment

State whether the following statements are true or false:

1. Stock index futures do not permit investment in the stock market without the trouble and expense involved in buying the shares themselves.
2. The profit or loss from a futures contract that is settled at delivery is the difference between the value of the index at delivery and the value when originally purchased or sold.
3. A option index futures contract is a contract to buy or sell the face value of the underlying stock index where the face value is defined as being the value of index multiplied by the specified monetary amount.
4. A futures contract represents a contractual agreement to purchase or sell a specified asset in future for a specified price that is determined today.

8.2 Mechanism of Futures Trading

The mechanics of futures trading consists of two parts.

Components of Futures Trade

The components of futures trade are described below:

(i) ***Futures Players:*** Futures trading, which represents a less than zero-sum game, can be considered beneficial if it results in utility gains. This is done by the transfer of risks between the market players. These players are: Hedgers, Speculators and Arbitrage

(ii) ***Clearing Houses:*** Every organised futures exchange has a clearing house that guarantees performance to all of the participants in the market. It serves this role by adopting the position of buyer to every seller and seller to every buyer. Thus, every trading party in the futures markets has obligations only to the clearing house. Since the clearing house matches its long and short positions exactly, it is perfectly hedged, i.e., its net futures position is zero.

It is an independent corporation and its stockholders are its member clearing firms. All futures traders maintain an account with member clearing firms either directly or through a brokerage firm.

(iii) ***Margin Requirements:*** Each trader is required to post a margin to insure the clearing house against credit risk. This margin varies across markets, contracts and the type of trading strategy involved. Upon completion of the futures contract, the margin is returned.

(iv) ***Daily Resettlement:*** For most futures contracts, the initial margins are 5% or less of the underlying commodity's value. These margins are marked to the market on a daily basis and the traders are required to realise any losses in cash on the day they occur. Whenever the margin deposit falls below minimum maintenance margin, the trader is called upon to make it up to the initial margin amount. This resettlement is also called marked-to-the-market.

Delivery Terms: This includes:

(a) Delivery Date: Some contracts may be delivered on any business day of the delivery month while others permit delivery after the last trading day.

(b) Manner of Delivery: The possibilities are:

- Physical exchange of underlying asset.

Notes

- Cash settlement as in the case of stock index futures.
- Reversing trade. This trade effectively makes a trader's net futures position zero thus absolving him from further trading requirements. In futures markets, 99% of all futures positions are closed out via a reversing trade.

(v) ***Types of Orders:*** Besides placing a market order, the other types are:

(a) *Limit Order:* It stipulates to buy or sell at a specific price or better.

(b) *Fill-or-kill Order:* It instructs the commission broker to fill an order immediately at a specified price.

(c) *All-or-none-order:* It allows the commission broker to fill part of an order at a specified price and remainder at another price.

(d) *On-the-open or on-the-close Order:* This represents orders to trade within a few minutes of operating or closing.

(e) *Stop Order:* Triggers a reversing trade when prices hit a prescribed limit.

(vi) ***Transaction Costs:*** The costs incurred are:

(a) *Floor Trading and Clearing Fees:* These are small fees charged by the exchange and its associated clearing house.

(b) *Commissions:* A commission broker charges a commission fees to transact a public order.

(c) *Bid:* Ask spreads.

(d) *Delivery Costs:* Those are incurred in case of actual delivery.

(vii) ***Tax Rules:*** The regulations include:

(a) *Marketing-to-the-market:* The gains/losses are considered at the end of the calendar year where futures contracts are marked-to-the-market.

(b) *Gains:* The realised and unrealised gains are taxed at the ordinary personal income tax rate.

(c) *Losses:* The realised and unrealised losses are made deductible by offsetting them against any other investment gains.

(d) *Commissions:* Brokerage commissions are tax deductible.

Execution of Futures Trade

For a client who wants to assume a long position in, say, a July British pound futures contract, the following steps are undertaken:

(i) Phone call to the agent.

(ii) The agent trades through an exchange member who may be a commission broker or a local.

(iii) The actual trading is conducted in a past for the particular futures contract involved. Trades are conducted through the use of sophisticated hand signals.

(iv) The commission broker confirms the trade with the agent who then notifies the client of the completed transaction and price.

Notes

(v) The client then deposits the initial margin with a member firm of the clearing house.

(vi) The commission broker can transact in the pit with another commission broker representing another client or with a local.

Self Assessment

State whether the following statements are true or false:

5. Each trader is required to post a margin to insure the clearing house against credit risk.
6. All-or-none-order stipulates to buy or sell at a specific price or better.
7. Fill-or-kill order instructs the commission broker to fill an order immediately at a specified price.
8. Limit order allows the commission broker to fill part of an order at a specified price and remainder at another price.
9. On-the-open or on-the-close order represents orders to trade within a few minutes of operating or closing.

8.3 Application of Futures

Passive Management: Index Fund

Futures are very convenient in constructing a portfolio. Let us assume that we wish to structure an index fund of $10 million and that the current price of the S&P 500 future is $500. Each contract is, therefore, equivalent to a common stock exposure of 500 times $500, or $ 2,50,000. To gain an exposure of $ 10 million in common stocks, one could easily and quickly purchase 40 S&P 500 futures contracts. Its advantages are:

- Lower transaction costs
- Higher liquidity in futures markets
- Portfolio construction via futures market offers the advantage of actually buying the index
- No dividends to reinvest.

General Strategy: Deposits to Portfolio

A second application of futures involves cash contributions (withdrawals) or a large deposit to an existing portfolio. Buying additional common stock with a sudden large cash inflow may take time – time during which one is exposed to significant market moves.

Stock index futures offer an alternative. Let us assume that on day one $50 million is deposited to the portfolio. This deposit could immediately be invested in the stock market and the desired stock market exposure achieved by buying $50 million worth of futures contracts. Given the assumptions of the index fund example, this could be accomplished by buying 200 contracts. These contracts can be sold off as desired individual issues are purchased for the portfolio. Assume that such stock purchases occur evenly over a ten day period from day two through day eleven. On each of these days, the portfolio manager buys $ 5 million worth of attractive stocks and sells one tenth of the futures contract position or approximately twenty eight contracts, the desired stock market exposure of the portfolio is maintained at all points of time.

Notes

Notes Futures can be used in a similar fashion to manage portfolio withdrawals, although in the opposite way.

Beta Control

The third application involves implementing an active stock market judgement. Assume that a portfolio manager having a positive outlook for the stock market wishes to raise the exposure of a portfolio to market, i.e., wants to raise the beta of a portfolio. One way to move the portfolio beta up is to sell a number of lower beta stocks and buy an equivalent amount of higher beta stocks. The alternative approach would be to buy an appropriate amount of stock index futures.

The advantages of controlling beta by using stock index futures are:

- The target beta can be achieved almost immediately.
- The optimal stock mix is maintained.

Asset Allocation Strategy

A fourth futures application involves asset allocation. Assume that the manager of a large portfolio wishes to change the stock bond mix to reflect new investment judgements. The strategy can be implemented in two ways.

The traditional way would be actually selling stocks in the market and buying bonds. The alternative way would be to use futures, i.e., selling the stock index futures and buying the equivalent treasury bond futures.

In addition to advantages of lower implementation costs and quicker implementation, the alternative strategy causes minimum disruption and less money is required to alter the asset mix due to leveraged nature of a futures market.

8.3.1 Options vs Futures

Futures should be distinguished from options.

Gains and losses on open futures positions are limited only by the price of the underlying securities. Gains on an option are virtually unlimited for the purchaser (subject to the movement of the underlying stock) but limited to the option premium for the writer. Losses, on the other hand, are virtually unlimited for the writer but limited to the premium for the purchaser.

Hedging can be accomplished with either options or futures. But a single futures position can neutralise exposure in the underlying asset. Accomplishing the same hedge with options requires simultaneous put and call options in separate markets.

On the other hand, options possess characteristics that cannot be effectively simulated by positions in the futures market. In particular, the option purchaser can insure against a decline in the value of the underlying assets while the option writer can generate income over and above the stock's dividend yield (or bond's coupon).

Problem 1:

Suppose that an importer has to make a payment of £10 million due in 90 days.

(a) If the 9-day pound forward rate is $1.5201, what is the hedged cost of making that payment?

Notes

(b) If the spot rate expected in 90 days is $1.5050, what is the expected cost of payment?

(c) Discuss the factors that will influence the hedging decision.

Solution:

An importer has a payment of £10 million due in 90 days.

(a) The hedged cost of making the payment is $15201000 (10,000,000 × 1.5201).

(b) The expected cost of payment is $15050000 (10,000.000 × 1.5050).

(c) The importer must consider the basis for its expected future spot rate and why that value diverges from the forward rate, his willingness to bear risk, and whether he has any offsetting pound assets.

Problem 2:

Assume that a foreign exchange trader assesses the French franc exchange rate three months hence as follows:

$0.21 with probability 0.25

$0.23 with probability 0.50

$0.25 with probability 0.25

The 90-day forward rate is $0.24.

(a) Calculate the volume in which the trader buy or sell French francs forward against the dollar if he is concerned only with expected values?

(b) In a real life scenario, what is likely to limit the trader's speculative activities?

(c) Assume the trader revises his probability assessment as given:

$0.19 with probability 0.33

$0.23 with probability 0.33

$0.27 with probability 0.33

If the forward rate remains at $0.24, will the revised estimates affect the trader's decision? Explain.

Solution:

(a) The expected future spot exchange rate is $. 23 ($.21 × .25 + $.23 × .50 + $.25 × .25). Because this is less than the forward rate of $.24, the trader will buy dollar forward against the French francs. She should buy an infinite amount of dollars. This absurd result is due to the assumption of a linear utility function.

(b) Regardless of his utility function, he will be restrained by bank policies designed to guard against excessive currency speculation.

(c) The expected future spot rate remains at $.23 approximately. However, the variance of the expected spot rate is now greater than it was before. If the trader is concerned solely with expected values, this will not affect his speculative activities. But if he is concerned with risk in addition to expected return, the greater variance and consequent greater risk should lead him to reduce his speculative activities.

Notes

Task On Monday morning, an investor takes a long position in a pound futures contract that matures on Wednesday afternoon. The agreed-upon price is $1.70 for £62,000. At the close of trading on Monday, the futures price rises to $1.72. At Tuesday close, the price rises further to $1.73. At Wednesday close, the price falls to $1.71 and the contract matures. The investor takes delivery of the pounds at the prevailing price of $1.71. Detail the daily settlement process. What will be the investor's profit (loss)?

Self Assessment

Fill in the blanks:

10. ..... can be accomplished with either options or futures.
11. Gains and losses on open futures positions are limited only by the price of the ..... securities.

8.4 Currency Options

Foreign Currency Options are instruments that have assumed significant importance in recent years. The awareness of this instrument's potential can be traced back to at least 1978 when such options were introduced by the newly established European Options Exchange (EOE) of Amsterdam. Most of the EOE's business focussed on its options on European stocks and the Amsterdam exchange had little success with currency options.

Exchanges in Amsterdam, Montreal and Philadelphia allowed for trading in standardised foreign currency options. Since that time, options have been offered on the Chicago Mercantile Exchange and The Chicago Board Options Exchange. A currency option is an alternative type of contract that can be purchased or sold by speculators and firms.

However, the increasing exchange rate volatility by 1982 had made the forex market roughly receptive to new techniques of exchange rate risk management.

Did u know? Currency options can be used to hedge the foreign exchange risk that results from commercial transactions and can also be used for speculative purposes.

8.4.1 Advantages of Currency Options

Options are used by buyers just like an insurance policy against movements in rates. Thus, they are alternatives to using the futures market or to the forward exchange market.

The main advantages of using options are:

- The option buyer, at the outset, judges the worst case scenario. Once premium is paid, no further cash is payable and when the main objective is to limit downside risk, this is a powerful advantage.
- Since there is no obligation to exercise an option, options are ideal for hedging contingent cash flows which may or may not materialise, such as tenders.
- Options provide a flexible hedge offering a range of prices where the option can be exercised, whereas forward or future markets only deal at the forward prices which exist at the time the deal is made.

Notes

- Options provide major possibilities in the range of tools available to treasures and traders. They can be used on their own to hedge or they can be combined with the forward and futures markets to achieve more complex hedges.
- Futures require daily margins to cover credit risk while forwards require a bank credit line. An option buyer can dispense with either depending on the specific market in which he operates.

8.4.2 Trading of Options

FX options are traded in two distinct markets:

1. ***OTC:*** The largest, by far, is the OTC market (OTC just means 'direct between counterparties') which comprises banks, American securities houses and corporates. There is no central marketplace as such. All transactions are conducted over the telephone or through the Reuter's Dealing System and is open 24 hours a day. Telex is rarely used these days except as a form of written confirmation for deals already concluded.

   The market participants deal with each other, either directly or through an OTC broker, quoting volatility rates as the dealing price (rather than in currency prices). The brokers act to bring counterparties together but have no part in the transaction itself. As in the spot FX markets, a fee is levied on both counterparties by the broker for such deals. Trades concluded directly are commission free (so there are no fees when a corporate deals with its bank).

2. ***Exchange Listed:*** The other market for FX options is the exchange listed markets of the various stock and futures exchanges around the world. The principal centres are Philadelphia, where the stock exchange lists options on spot FX and Chicago, where the Mercantile Exchange lists options on its FX futures contracts. In both cases, quotations are in the form of currency (rather than volatility).

   Access to the market is through brokers who impose commissions for each contract traded. The market operates on the floor of the exchange where brokers gather to reflect their clients' orders with market makers or specialists providing the prices. The markets have specified opening and closing times for each currency contract. Also, the exchanges have widened the availability by extending trading hours.

Self Assessment

Fill in the blanks:

12. …… require daily margins to cover credit risk.
13. …… provide a flexible hedge offering a range of prices where the option can be exercised.

Caselet

Currency Swap Pact between by IFC and SBI

The World Bank's private lending arm, International Finance Corporation entered into a currency swap agreement with State Bank of India as part of efforts to increase its business in the country further from $400 million Since FY 2000.

Contd...

Notes

According to the agreement, IFC would provide loans to Indian companies in local currency without their being exposed to foreign exchange risk. The facility is expected to be particularly useful in IFC's efforts to extend local currency financing for the infrastructure as well as for the general manufacturing sector.

This offering would complement IFC's other rupee financing products, which include partial guarantees and structural finance products. With annual business volume of about $400 million, India has emerged as the largest recipe of IFC financing in the financial year ended 2001. IFC's initiatives in local currency financing are expected to sustain further growth in the size and diversity of its business in India.

Source: *International Financial Management*, Madhu Vij, Excel Books.

8.5 Fundamentals of Currency Options

Options are derivative securities that are derived from some underlying assets (stock, index, currency interest rate, commodity) and their prices depend critically on the spot values of those assets.

An option is a 'wasting asset'; that is, it has only an initial value that declines (or "wastes" away) as time passes – it may even expire worthless. The holder has the option, to exercise it or sell it, in the listed options market before the expiration date.

Options trading (sans transaction costs) represents a zero sum game, i.e., any profits (losses) experienced by option buyer are offset by losses (profits) experienced by option writers while options trading (transaction costs included) must be a less than zero sum game. Either way (transaction included or not) options trading may result in utility gains through transfer of risk between market players.

8.5.1 Option Instruments

Basically there are two types of option instruments:

(i) Call Option

(ii) Put Option

The person selling an option in the market is known as option writer and the person buying the option is called option holder.

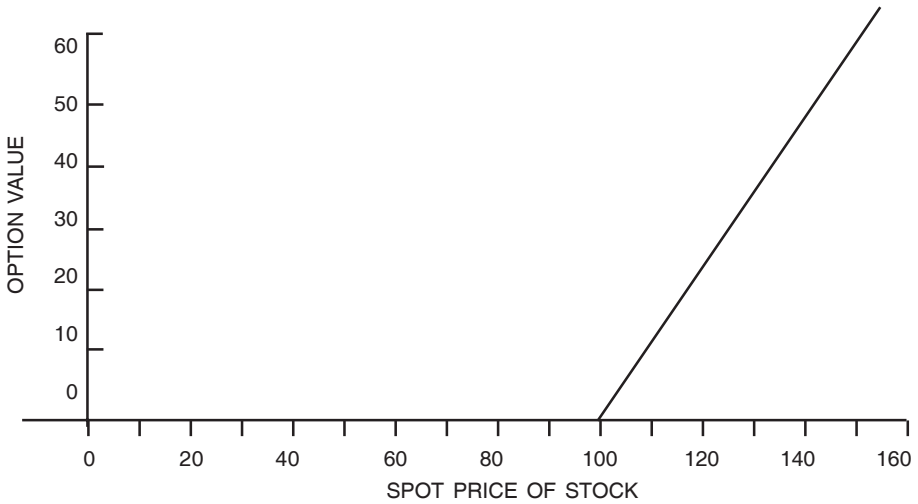
Call Option

A call option gives its owner the right to buy stock at a specified exercise or striking price. In some cases, the option can be exercised only on one particular day and it is then conventionally known as a European call; in other cases it can be exercised on or before that day and it is then known as an American call. The diagram below shows the change in the value of a call option on a stock with an exercise price of ₹ 100 on TISCO's stock. If the stock price at the time of exercise is less than ₹ 100, nobody will exercise the call option and the call option will be worthless. On the other hand, if the share price turns out to be greater than ₹ 100, it will pay us to exercise our call option to buy the share. In this case the option will be worth the market price of share minus ₹ 100, that we must pay to acquire it.

If TISCO's stock price falls to ₹ 80, the call option will be worthless, but if the price rises to ₹ 125, the option will be worth 125 – 100 = ₹ 25. The possible pay-offs to the option are therefore:

Notes

Figure 8.1: Pay-off from a Call Option to the Option Holder

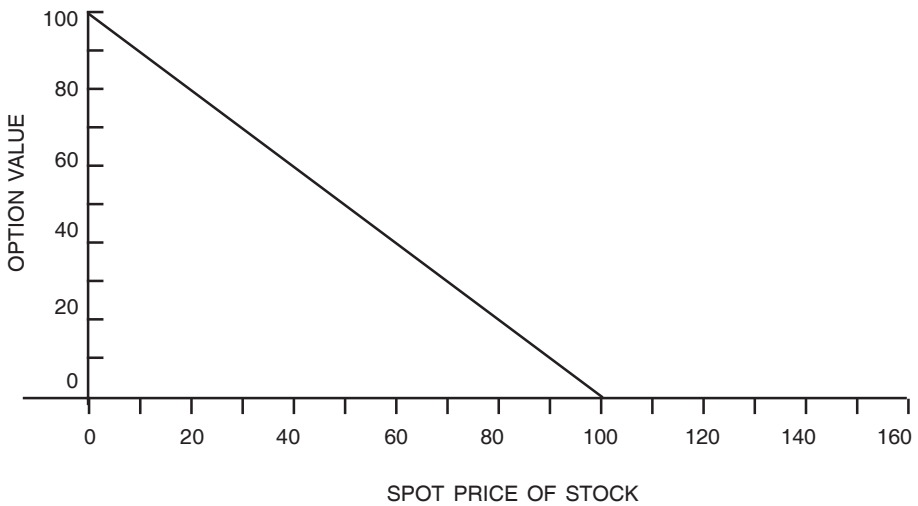


	Stock price = ₹ 80	Stock price = ₹ 125
Worth of call option	₹ 0	₹ 25

Put Option

Assume a European put option with the same exercise price. Whereas the call gives us the right to buy a share for ₹ 100, the comparable put gives us the right to sell it for ₹ 100. Therefore, circumstances in which the put will be valuable are just the opposite of those in which the call will be valuable. This can be seen from the position diagram below. If the share price immediately before expiration turns out to be greater than ₹ 100, nobody will want to sell the share at that price; our put option will then be worthless. Conversely, if the share price turns out to be less than ₹ 100, it will pay to buy the share and then take advantage of the option to sell it for ₹ 100. In this case, the value of the put option at expiration is the difference between the ₹ 100 proceeds of the sale and the market price of the share.

Figure 8.2: Pay-off from a Put Option to the Option Holder



Notes

For example, if the share is worth ₹ 60, the put is worth ₹ 40.

Value of put option at expiration = Exercise price – Market price of the share

₹ 100 – ₹ 60 = ₹ 40

8.5.2 Option Categories

Options can be categorised in two ways:

1. ***According to the type of leakage exhibited by their underlying assets:*** Many securities that underline option contracts pay dividend or interest and since the prices of listed options are affected by these intervening capitalisation changes, the securities are said to exhibit leakage.

   Accordingly, these option instruments are classified as:

   (a) *Zero Leakage Option Instruments.* These are options written on assets paying no dividends or interest and having no substantial storage costs. Options falling under this category are:

   - Gold Options: Gold pays no dividend or interest and its storage costs are nominal.
   - Stock Options: Depending on either the firm's dividend pattern (some firms do not pay dividend) and the option's maturity (options written on a dividend paying stock may expire prior to stock's next ex-dividend date), certain stock options have zero leakage.

   (b) *Discrete Leakage Option Instruments.* These are options derived from underlying assets which exhibit an intervening cash flow that is continuous. Options in this category are:

   - Stock Options
   - Stock Index Options: In the US, stock index options traded on SP100 and NYSE composite index are very popular. SP100 is an index of many individual stocks that pay different dividends throughout the year but the index itself exhibits discontinuous leakage as most stock dividends are paid out during certain months/days.

   (c) *Continuous Leakage Option Instruments.* These are options derived from assets exhibiting a continuous intervening cash flow. Options in this category are:

   - Currency Options: Foreign exchange can be used to purchase interest bearing foreign assets thus generating a continuous leakage as determined by foreign interest rate.
   - Future Options: A futures price exhibits a continuous leakage as the contract matures and the spot and futures prices converge.

2. ***Options Based on Nature of Underlying Assets:*** Option instruments can also be classified as:

   (a) *Options on Actuals:* Stock options, stock index options, currency options and commodity options.

   (b) *Options on Futures:* i.e., futures options.

Notes

The following table now differentiates between options on actuals and options on futures.

Table 8.1: Options on Actuals and Futures

Options on Actuals (Options on Spots)	Options on Futures
1. Exercising a spot option entails trading of the actual spot asset which may be a stock, stock index, currency or commodity.	1. Exercising a futures option entails assuming a position in a futures contract written on a spot asset.
2. To exercise a spot option, the exerciser must have sufficient capital to cover the entire exercise price.	2. Futures options have less severe capital requirements as this entails depositing the futures margins.
3. Spot options pose liquidity problems. A spot option of a unique asset has limited trading due to fixed supply of the unique asset.	3. Futures options help maintain liquidity by creating additional supplies of the deliverable asset – traders can write and contract in more futures contracts.

Self Assessment

Fill in the blanks:

14. Options trading represents a …… game, i.e., any profits (losses) experienced by option buyer are offset by losses (profits) experienced by option writers while options trading (transaction costs included) must be a less than zero sum game.

15. …… are options written on assets paying no dividends or interest and having no substantial storage costs.

8.6 Pricing of Currency Options

The most technically challenging aspect of currency options is setting their prices or premium. Since even small exchange rate changes can have significant effects on the profitability of options, it is necessary to develop option pricing models. Thus, while options have been of interest for many years, it was only in 1973 that Fisher' Black and Myro Scholes came up with a satisfactory analysis for the actual pricing of currency. Their model is referred to as the Black-Scholes model.

Various factors influence the value of an option. A summary of the effect of these factors on value of a call option/put option is given below:

Table 8.2: Factors Influencing the Value of an Option

Determining Factors	Effect of Increase in the Factor	
	On Put Option	On Call Option
1. Current stock price (S)	-	+
2. Striking price (K)	+	-
3. Time to expiration (t)	+	+
4. Stock volatility	+	+
5. Interest rates	-	+
6. Cash dividends	+	-

Note: + Increase in put/call value
– Decrease in put/call value

Notes

Stock Price

At expiration, a call option must have a value that is equal to zero or the difference between the stock price and the exercise price whichever is greater.

For example, consider that the stock price is ₹ 50 and the exercise price is ₹ 40. If the option is selling at ₹ 5, an arbitrageur would make the following transactions:

Buy a call option	(₹ 5)
Exercise the option	(₹ 40)
Sell the stock	₹ 50
Net cash flow	+ ₹ 5

Hence the call price has to be greater or equal to ₹ 10 to prevent arbitrage opportunities.

Exercise Price

If two call options are alike, except that the exercise price of the first is less than the exercise price of the second, then the option with the lower exercise price must have a price that is equal to or greater than the price of the option with the higher exercise price.

For example, consider two call options on the same stock with the same time to expiration. The first has a exercise price of ₹ 100 and sells for ₹ 10. The second has a exercise price of ₹ 90 and sells for ₹ 5. An arbitrageur would transact as follows:

Sell the option with ₹ 100 exercise price	+₹ 10
Buy the option with ₹ 90 exercise price	(₹ 5)
Net cash flow	₹ 5

This is an impossible pricing situation as there will always be some profit (Table 8.3). From the table, it can be seen that a total profit of ₹ 10 can be achieved without risk or investment and so it represents arbitrage. As option pricing is to be rational, arbitrage is not allowed. Hence, the option with ₹ 90 strike price must sell at [3] option with ₹ 100 strike price.

Table 8.3: Profit or Loss on the Option Position

Stock Price at Expiration	For E = ₹ 90	For E = ₹ 100
80	-5	10
90	-5	10
95	0	10
100	5	10
105	10	5
110	15	0
115	20	-5

The Role of Time to Expiration

A mathematical relationship exists between the influence on a currency option's price of the interest rate differential and the influence of time to expiration. The longer the time to expiration, the greater is the influence of the interest rate differential. A large interest rate differential has little effect on the price of a currency option that is about to expire but a much smaller differential may have an important effect on the price of a currency option with a relatively distant expiration date.

Notes

If there are two options that are otherwise alike, the option with the longer time to expiration must sell at an amount equal to or greater than the option that expires earlier.

For example, consider the two options on the same stock:

(a) Strike price = ₹ 100, maturity = 6 months, price = ₹ 8

(b) Strike price = ₹ 100, maturity = 3 months, price = ₹ 10

The transactions made by an arbitrageur would be:

Buy the 6 months option	(₹ 8)
Sell the 3 months option	+₹ 10
Net cash flow	₹ 2

The only risk against the ₹ 2 profit is that the option which was sold might be exercised. In that case, the position can be squared up by selling the six months options. The ₹ 2 profit would materialise even in this case.

Hence, the six months option has to sell at a price ≥ ₹ 10.

Interest Rates

Let us consider an example.

Assume that a stock now sells for ₹ 100 in the market and over the next year its value can change 10% in either direction. Risk free rate of interest is 12% and a call option exists on the stock with a value of ₹ 100 and an expiration date one year from now. Two portfolios can be constructed.

Portfolio A: 100 shares of stock worth ₹ 10,000.

Portfolio B: ₹ 10,000 pure discount bond maturing in one year with a current value of ₹ (10000/1.12) = ₹ 8929. And one option contract, with an exercise price of ₹ 100 per share.

Consider the values of the two portfolios one year from now.

	+10%	-10%
Portfolio A (Stock)	₹ 11000	₹ 9000
Maturing Bond B	₹ 10000	₹ 10000
Call Option	₹ 1000	0

As can be seen from the table, portfolio B is a better portfolio to hold as it gives better results than portfolio A under both conditions. If stock prices go down, portfolio B is worth ₹ 1000 more than portfolio A; otherwise, both have the same value. Since portfolio B has more value than portfolio A, its cost must equal or exceed that of portfolio A to deny riskless arbitrage opportunity. Thus, bond price + call option price = Cost of portfolio A = ₹ 10000. Thus, call option price = ₹ 10000 – ₹ 8929 = ₹ 1071.

Hence, to deny arbitrage opportunity, C ≥ S – Present Value(E). The call price must be greater than or equal to the stock price minus the present value of the exercise price. Also, if the interest rate were higher, say 20%, value of the call option will be – (₹ 10000/1.2) = ₹ 1667.

Based on this line of reasoning, another principle can be stated: 'other things being equal, the higher the risk-free rate of interest, the greater must be the price of the call option.'

8.6.1 Speculating with Currency Options

Investors may speculate in the currency options market based on their expectations of the future movements in a particular currency. For example, if the speculators expect that the Japanese yen will appreciate, they will purchase Japanese yen call option. When the spot rate of Japanese yen

Notes

appreciates, they can exercise their option by purchasing yen at the strike price and then selling the yen at the prevailing spot rate.

For every buyer of a currency call option, there must be a seller. A seller of a call option is obligated to sell a specified currency at a specified price (the strike price) up to a specified expiration date. Sometimes, when the speculators expect the currency to depreciate in the future, they may want to sell a currency call option. And the only way a currency call option will be exercised will be when the spot rate is higher than the strike price. In this way, when the option is purchased, the seller of the currency call option will receive the premium. He can keep the entire amount if the option is not exercised. Also, when it appears that an option will be exercised there will still be sellers of options. But such options will sell for high premiums because of the increased risk of the option being exercised at some point.

Example: Suppose that Mr A is a speculator who buys a British pound call option with a strike price of $1.50 and a December settlement date. The current spot price as of date is about $.012. A pays a premium of $0.12 per unit for call option. Assume there are no brokerage fees. Just before the settlement date, the spot rate of the British pound reaches $1.51. At this time, A exercises the call option and then immediately sells the pounds at the spot rate to a bank. To determine A's profit or loss, we will first compute his revenues from selling the currency, then subtract from this amount the purchase price of pounds when exercising the option and also subtract the purchase price of the option. The computations are as follows. Assume one option contract specifies 32,000 units.

	Per Unit	Per Contract
Selling price of pound	$1.51	48,320 ($1.51 × 32,000 units)
–Purchase price of pound	–$1.50	–$ 48,000 ($1.50 × 32,000 units)
–Premium paid for option	–$0.12	–$ 384 ($.012 × 32,000 units)
=Net profit	–$.002	–$64 (–$.002 × 32,000 units)

Assume that B was the seller of the call option purchased by A. Also assume that B would only purchase British pounds if and when the option was exercised at which time he must provide the pounds at the exercise price of $1.50. Using the information in this example, B's net profit from selling the call option is derived below:

	Per Unit	Per Contract
Selling price of pound	$ 1.50	$48,000 ($1.50 × 32,000 units)
–Purchase price of pound	–$ 1.51	$48,320 ($1.51 × 32.000 units)
–Premium received	+$.012	+$384 ($.012 × 32,000 units)
=Net profit	$.002	$642 ($.002 × 32,000 units)

As a second example, assume the following information:

- Call option premium on Swiss francs (SF) = $.01 per unit
- Strike price = $.44
- 1 option contract represents SF 62,500.

A speculator who had purchased this call option decided to exercise shortly before the expiration date. When the spot rate reached $.49, the francs were immediately sold in the spot market by the speculator. Given this information, the net profit to the speculator was:

	Per Unit	Per Contract
Selling price of SF	$.49	$ 30,625 ($.49 × 62,500 units)
–Purchase price of SF	–$.44	–$27,500 ($ .44 × 62,500 units)
–Premium paid for option	–$.01	+ $625 ($.01 × 62,500 units)
=Net profit	$.04	$2,500 ($.04 × 62,500 units)

Notes

If the seller of the call option did not obtain francs until the option was about to be exercised, the net profit to the seller of the call option was:

	Per Unit	Per Contract
Selling price of SF	$.44	$27,500 ($.44 × 62,500 units)
–Purchase price of SF	–$.49	–$30,625 ($.49 × 62,500 units)
+Premium paid for option	+$.01	+$625 ($.01 × 62,500 units)
=Net profit	–$.04	–$2,500 ($.04 × 62,500 units)

When brokerage fees are ignored, the currency call purchaser's gain will be the seller's loss. The currency call purchaser's expenses represent the seller's revenues and the purchaser's revenues represent the seller's expenses. Because it is possible for purchasers and sellers of options to close out their positions, the relationship described here will not hold unless both parties begin and close out their positions at the same time.

An owner of a currency option may simply sell the option to someone else before the expiration date rather than exercising it. The owner can still earn profits, since the option premium changes over time reflecting the probability that the option can be exercised and the potential profit availed from exercising it.

Break-even Point from Speculation

The purchaser of a call option will break even if the revenue from selling the currency equals the payments for (i) the currency (at the strike price), and (ii) the option premium. In other words, regardless of the number of units in a contract, a purchaser will break even if the spot rate at which the currency is sold is equal to strike price plus the option premium. In the previous example, the strike price was $1.50 and the option premium was $.012. Thus, in order for the purchaser to break even, the spot rate existing at the time the call is exercised must be $1.512 ($1.50 + $.012). Speculators would not have purchased the call option if they thought the spot rate would only reach this break-even point without going higher before the expiration date. The computation of the break-even point is useful for a speculator deciding whether to purchase a currency call option or not.

Speculators could also attempt to profit from selling currency put options. The seller of such options is obligated to purchase the specified currency at the strike price from the owner who exercises the put option. Speculators who believe the currency will appreciate (or at least will not depreciate) may consider selling a currency put option. If the currency appreciated over the entire period, the option would not be exercised. This is an ideal situation for put option sellers since they keep the premiums received when selling the options and bear no cost.

Example: To illustrate how to determine the net profit from speculating with put options, assume the following information:

- Put option premium on British pound = $.04 per unit
- Strike price = $1.50
- 1 option contract represents 32,000 pound.

A speculator who had purchased this put option decided to exercise the option shortly before the expiration date when the spot rate of the pound was $1.40. The pounds were purchased in the spot market at that time by the speculator. Given this information, the net profit to the purchaser of the put option was:

Notes

	Per Unit	Per Contract
Selling price of pound	$1.50	$48,000 ($1.50 × 32,000 units)
–Purchase price of pound	–$1.40	–$44,800 ($1.40 × 32,000 units)
–Premium paid for option	–$.04	–$1280 ($.04 × 32,000 units)
=Net profit	$.06	$1920 ($.06 × 32,000 units)

Assuming that the seller of the put option sold the pounds received immediately after the option was exercised, the net profit to the seller of the put option was:

	Per Unit	Per Contract
Selling price of pound	$1.40	$44,800 ($1.40 × 32,000 units)
–Purchase price of pound	–$1.50	–$48,000 ($1.50 × 32,000 units)
–Premium received	+$.04	+$1280 ($.04 × 32,000 units)
=Net profit	–$.06	–$1920 ($.06 × 32,000 units)

The seller of the put options could simply refrain from selling the pounds (after being forced to buy them at $1.40 per pound) until the spot rate of the pound rose. However, there is no guarantee that the pound will reverse its direction and begin to appreciate. The seller's net loss could potentially be greater if the pound's spot rate continued to fall unless the pounds were sold immediately.

Whatever an owner of a put option gains, the seller loses, and vice versa. This relationship would hold if brokerage costs did not exist and if the buyer and seller of options entered and closed their positions at the same time. However, brokerage fees for currency options exist and are very similar in magnitude to those of currency futures contracts.

Problem 1:

1. Assume that a MNC ABC Ltd. would like to execute a money market hedge to cover a ¥250,000,000 shipment from Japan of music systems it will receive in six months. The current exchange rate for yen is ¥124/$.

   (i) How would ABC Ltd. structure the hedge? What would it do to hedge the Japanese yen it must pay in six months? The annual yen interest rate is 4%

   (ii) The yen may rise to as much as ¥140/$ or fall to ¥115/$. What will the total dollar cash flow be in six months in either case?

Solution:

(a) ABC Ltd. must go for "hedging currency risk through the purchase of currency options". To offset the risk, the company should purchase 180 days Yen call options.

OR

It can also be structured like this:

(i) Borrowing ¥ that amount so that 250,000,000 ¥ received can be used to offset the loan

(ii) Convert and Invest in $, Repay the yen loan in 180 days.

Amount to be borrowed = 250000000/1.02= 245,098,039¥

Dollar Investment = US$ 1976597

Interest to be Paid = 4901961¥

Notes

(b) Dollar cash flow is as follows:

(i) SR: ¥ 140/$

Dollar cash flow = (1976597 × 140 – 4901961) – 250000000

= 21821619¥ = $155869

(ii) SR: ¥115/$

Dollar cash flow = (1976597 × 115 – 4901961) – 250000000

= – 27593305 ¥ = $239942

Task Assume that a speculator purchased a call option on Swiss francs for $0.1 per unit. The strike price was $.45 and the spot rate at the time the franc was exercised was $.46. Assume there are 62,000 units in a Swiss franc option. What was the net profit on this option to the speculator?

Case Study

HDFC in the First Rupee Currency Swap Deal

The first five-year dated rupee currency swaps were booked in India with HDFC Bank booking two 5-year dollar/rupee currency swaps of Reliance Industries Ltd (RIL) and IPCL for $ 17 million (₹ 60 crore). This was the first such deal after Reserve Bank of India (RBI) permitted banks to run a swap book and corporates to swap a rupee liability into a foreign currency liability.

In April 1997, the RBI allowed banks to deal in swaps, without its permission for tenors over six months. The RBI also in the same credit policy, initiated steps to develop a deeper, liquid rupee term market. In the past corporates and banks needed prior regulatory approval to book dollar/rupee currency swaps.

The recent liberalization steps of the RBI now allow corporate and banks to deal in these derivative transactions relatively freely to manage their assets and liabilities in a more efficient manner. By doing these swaps RIL and IPCL were able to hedge the risk arising from a change in the value of rupee and to swap rupee borrowings into a foreign currency denominated liability. HDFC Bank structured the transactions so that the bank was counterpart to both the clients.

The bank assumed the counter party credit risk besides arranging and structuring the transaction.

Question

Comment on the above deal.

Source: *International Financial Management*, Madhu Vij, Excel Books.

8.7 Summary

- A futures contract represents a contractual agreement to purchase or sell a specified asset in future for a specified price that is determined today. The specified price is the future price. The basic reason why a currency future market arose was because private individuals were unable to avail themselves of the forward market.

Notes

- The mechanism of futures trading consists of two points – components of futures trade and execution of future trade. As the futures market serves the needs of individuals and groups who may be active or passive traders, risk averse or risk takers, they may be broadly classified as – price discovery, speculation and hedging
- Futures can be applied in various areas – constructing a portfolio, cash contributions/ withdraw portfolio, implementing an active stock market judgment and asset allocation strategy.
- Currency options are one of the fastest growing segments of the global foreign exchange market. An option is a financial instrument that gives the holder the right – but not the obligation – to sell (put) or buy (call another financial instrument at a set price and expiration date. Currency options can be used to hedge the foreign exchange risk that results from commercial transactions and can also be used for speculative purposes.
- Options are of two type – American style and European style. If the option can be exercised at any time during its lifetime, it is called an American style option but if it can be exercised only on its expiration data, it is called a European style option.
- FX options are traded in two markets – OTC and exchange listed. The OTC is the largest market where the market participants deal with each other, either directly or through an OTC broker. The exchange listed markets operate on the floor of the exchange where brokers gather to reflect their clients' order with specialists or market makers providing the prices.
- Options can be categorised in two ways. First, according to the type of leakage exhibited by their underlying assets and second, according to the nature of the underlying asset. The most challenging aspect of currency options is setting their prices or premium..

8.8 Keywords

All-or-none-order: It allows the commission broker to fill part of an order at a specified price and remainder at another price.

Continuous Leakage Option Instruments: These are options derived from assets exhibiting a continuous intervening cash flow.

Discrete Leakage Option Instruments: These are options derived from underlying assets which exhibit an intervening cash flow that is continuous.

Fill-or-kill Order: It instructs the commission broker to fill an order immediately at a specified price.

Limit Order: It stipulates to buy or sell at a specific price or better.

On-the-open or on-the-close Order: This represents orders to trade within a few minutes of operating or closing.

Options: Options are derivative securities that are derived from some underlying assets (stock, index, currency interest rate, commodity) and their prices depend critically on the spot values of those assets.

Zero Leakage Option Instruments: These are options written on assets paying no dividends or interest and having no substantial storage costs.

8.9 Review Questions

1. Define a futures contract. What are the different types of futures contracts? What are the advantages of using stock index futures?

Notes

2. Explain briefly the mechanism of futures trading.
3. Give two important applications of futures.
4. How does the forward market differ from the futures and options markets?
5. Compare and contrast the forward and futures contracts.
6. How can currency futures be used by corporations?
7. How can currency futures be used by speculators?
8. When should a firm consider purchasing a call option for hedging?
9. When should a firm consider purchasing a put option for hedging?
10. Assume a US speculator sold a call option on German marks for $.02 per unit. The strike price was $.36 and the spot rate at the time the mark was exercised was $.42. Assume the speculator did not obtain marks until the option was exercised. Also assume there are 62,000 units in a German mark option. What was the net profit to the seller of the call option?

Answers: Self Assessment

1.	False	2.	True
3.	False	4.	True
5.	True	6.	False
7.	True	8.	False
9.	True	10.	Hedging
11.	underlying	12.	Futures
13.	Options	14.	zero sum
15.	Zero Leakage Option Instrument		

8.10 Further Readings

Books

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Eun/Resnick, *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi.

Shapiro Allan C, *Multinational Financial Management*, Prentice Hall, New Delhi.

Online links

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http://www.investopedia.com/terms/c/currencyfuture.asp#axzz2NPqbiEIg

Unit 9: Interest Rate and Currency Swaps

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Objectives

After studying this unit, you will be able to:

- Explain the concept of Swaps
- Discuss the problems with parallel and back-to-back loans
- Discuss the terminology related to Swaps
- Describe interest rate Swaps
- Discuss the concept of currency Swaps
- Explain the various forms of currency Swaps

Notes

Introduction

The most striking development in international finance which has had the most significant impact on the world's money markets has been the introduction of the swap market in the mid-1980s. Swap is essentially a derivative used for hedging and risk management. There are numerous types of swaps, but interest rate swaps and currency swaps are the most commonly used swaps. Interest rate swaps were one of the most important innovations in the financial markets of the 1980s. They grew from virtually zero to an estimated $1 trillion worldwide. It is rather difficult to find out a precise estimate of the total outstanding volume of swaps because there is no centralised reporting agency that collects accurate data. The expansion in the swap market has occurred in response to the challenging phenomena which have characterised financial markets today – arbitrage opportunities, tax regulations, capital controls, etc., as a result of market imperfection, need for protection against interest rate and exchange rate risk, improvements in computer technology and increasing integration of world capital markets.

A swap is an agreement between two or more parties to exchange a set of cash flows over a period in the future. The basic idea behind swaps is that the parties involved get access to markets at better terms than would be available to each one of them individually. The gains achieved by the parties are divided amongst them depending on their relative competitive advantage.

Swaps have now integrated with all sorts of other more traditional financial arrangements. Therefore, not only do the treasury staffs of companies have to be well versed in swaps, but the bank officers who call on those people also have to understand how swaps can be used to help companies accomplish their financial objectives.

Two categories of swaps have dominated the swap revolution: currency swaps and interest rate swaps. In a currency swap, the counter parties initially exchange a principal amount in one currency for the same amount converted to another currency at the prevailing spot rate. Interest payments are then made in the respective currencies at interest payment dates and the principal amounts are re-exchanged at maturity. In an interest-rate swap, the counter parties agree to exchange interest payments based on a notional principal; no actual exchange of principal takes place.

The market for both currency and interest rate swaps has grown substantially during the last two decades. For instance, although the first interest rate swap appeared in 1982, the total amount of interest rate swap outstandings increased from $ 683 billion at year end 1987 to $309,588 billion in Dec 2007 to $356, 772 billion in June 2008.

Swaps, together with futures, options and other financial derivatives that rose to prominence during the last two decades, have attained a certain maturity. Individually and together, they allow yield curve and currency risks and liquidity and geographic market considerations, all to be managed separately – and also independently of underlying cash market states.

Thus, swaps are a powerful tool propelling global capital market integration. However, the realisation of total swap potential will require resolution by governments and judicial authorities of tax and legal issues, plus revamping of management and accounting practices concerning risk exposure.

9.1 Conceptual View of Swaps

The concept of the swap (both interest rate and currency swaps) has broad implications and applications in finance. Condensed to its essence, however, its most important implication lies in the idea that swap allows the separation of the funding aspect of financing from the structure of the liability (i.e., whether it is a fixed or variable rate, the short-term interest reference rate it

is tied to, whether repayment is in dollars, sterling, or marks, etc.). In the case of an asset, the swap can, in a similar fashion, allow the separation of the investment or credit aspect from the structure of the asset.

With the swap, the contemporary decision process looks to "assemble" financing. First, identify the most attractive source of funding, regardless of its currency or interest structure and then engineer the appropriate swap to create the desired liability structure.

There are five basic components of financing:

- Credit — The willingness of an investor to take the default risk of a company
- Funding — The provision of loan funds and the return on those funds
- Tenor — The repayment schedule
- Currency — The currency denomination(s) of the repayment
- Interest Rate — The basis on which loan interest is calculated

9.1.1 Development of Parallel Loans

Parallel loans means of financing investment abroad in the face of exchange control regulations and are regarded as the forerunners of swaps. In fact, currency swap is regarded as an outgrowth of the experience with parallel and back-to-back loans. Both of these attained prominence in the 1970s when the British government tried to discourage capital outflows by taxing pound sterling forex transactions and when their usefulness in maneuvering around comprehensive exchange controls was demonstrated.

Notes Parallel loans involve at least four parties and usually the parties consist of two pairs of affiliated companies. The parallel loans commonly consist of a loan by an affiliate of each company to an affiliate of the other company, with the loans being in different currencies.

Example: Assume that a parent firm in the Netherlands with a subsidiary in UK wants a one year pound sterling loan. Also, assume a parent corporation in UK with a subsidiary in Netherlands wants to take a one year loan in guilders. Each parent company has a higher credit rating in its home country than its subsidiary has in the country in which it is located.

The situation here is ideal for a parallel loan arrangement. Each parent company could borrow locally at a favourable interest rate in their capital markets and relend to the other's subsidiary. This procedure would allow the two subsidiaries to avoid forex transactions and the cost savings realised could be allocated to effectively lower each subsidiary's borrowing cost.

Figure 9.1 shows the example. The solid line depicts the resulting exchange of principals. The flow of interest payments and the repayments of principal are depicted by the broken lines (2 and 3).

In this example there is a transfer of the Netherlands guilder between the Netherlands parent and the Netherlands' subsidiary of the British parent at inception and a transfer back at the maturity date of the loan so that the Netherlands parent can repay the loan. Similarly, there is a transfer of the pound sterling principal from the British parent to the British subsidiary of Netherlands parent and a transfer back at the maturity date so that the British parent can retire its loan. During the term of the loans the Netherlands subsidiary of the British parent earns

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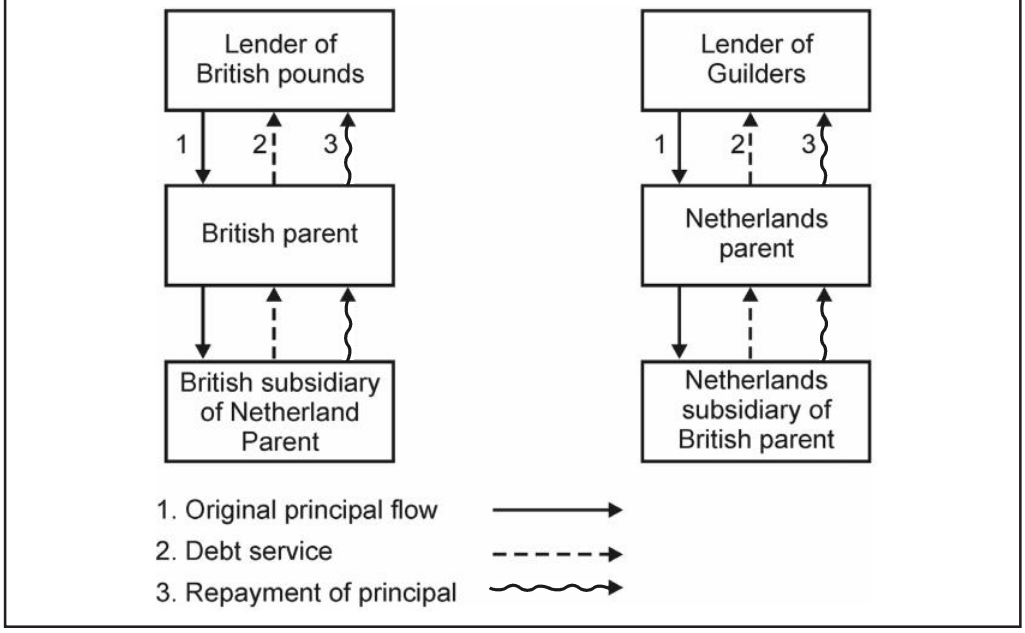
revenues in guilders so that it can pay the guilders debt service to the Netherlands parent to pay to the Netherlands lender. Similarly, the British subsidiary of Netherlands parent earns revenues in pound sterling so that it can pay the pound sterling debt service to the British parent to pay the British lender.

Figure 9.1: Example of Parallel Loans



9.1.2 Back-to-back Loans

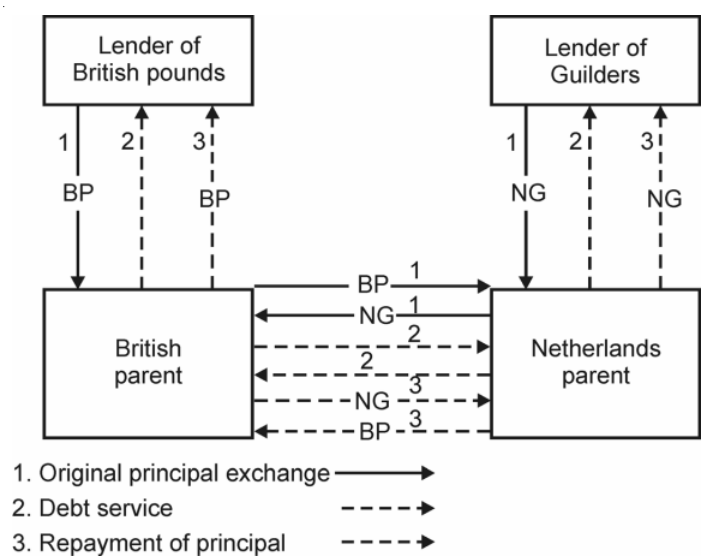
Back-to-back loans resemble parallel loans, but are simpler since they involve only two parties instead of four. In a back-to-back loan the parties simultaneously lend to each other but in different currencies. This arrangement would tend to lower each firm's cost of borrowing given the borrowing advantage which each firm has in its home country currency and also the fact the forex transactions would be avoided. Continuing with the earlier example, the British and Netherlands parent firms would lend directly to one another in a back-to-back loan. Figure 9.2 shows the details. The British parent would borrow pounds sterling in British capital market and relend the principal amount to the Netherlands parent. The Netherlands parent would borrow guilders in the Netherlands capital market and relend the principal sum to the British parent. Here it is assumed that the relending is done at a cost. When the debts mature, the principal sums would be re-exchanged so that the two parent firms can retire their debts in their national capital markets.

Annually, each parent firm would pay to the other the annual debt service in the currency needed by the recipient to make the payment in its national capital market. In the present example, the Netherlands parent would pay pounds sterling to the British parent and receive guilders from the British parent.

The parent firms can, if they want, relend the foreign currency proceeds to a foreign subsidiary. Thus, the Netherlands parent may relend the pounds sterling to its British subsidiary and the British parent may relend the guilders to its Netherlands subsidiary. The basic difference between a parallel loan and a back-to-back loan is the party to whom the parent firm lends.

Notes

Figure 9.2: Back-to-back Loans



Self Assessment

State whether the following statements are true or false:

1. Parallel loans involve at least four parties.
2. In a back-to-back loan the parties simultaneously lend to each other in the same currencies.
3. Back-to-back loans resemble parallel loans.

9.2 Problems with Parallel and Back-to-back Loans

Both parallel and back-to-back loans were time consuming and expensive to establish. Time had to be spent searching for a party whose needs would match exactly with the other party. This proved to be expensive and difficult sometimes. Specifically, there were three major problems with the parallel and back-to-back loans. First, if one party defaulted the other party was not automatically released from its obligations under the loan agreement. Second, even though the two loans cancelled each other out, they were still considered on balance sheet items for accounting and regulatory purposes. Third, parallel loans were difficult to arrange because it was necessary to find two counter parties with exactly off setting needs.

Self Assessment

Fill in the blank:

4. Parallel loans were difficult to arrange because it was necessary to find two counter parties with exactly .....

9.3 Terminology Related to Swaps

Swaps terminology is given below:

- ***Swap Facilitators:*** Swaps are mutual obligations among the swap parties. But it may not be necessary for the counter parties involved in a swap deal to be aware of each other

Notes

because of the role assumed by a swap dealer (market maker) or swap broker. Collectively, the swap facilitators are known as 'Swap Banks' or simply 'Banks'.

- ***Swap Broker:*** When a swap facilitator does not take any financial position in a swap arrangement he initiates and he dissociates himself from the deal after making an arrangement between the counter parties who have approached him, then he is called a swap broker. He charges a fee (commission) for the services provided and he is not a party to the swap contract. He merely acts as an intermediary. Thus a swap broker is an economic agent who helps in identifying the potential counter parties to a swap transaction. A swap broker is also called a market maker.
- ***Notional Principal:*** It is the principal amount on which the interest calculation is made.
- ***Basis Points (BP):*** Basis point is 1/100th of 1 % i.e. 10 basis points = 0.1%.
- ***Swap Coupon:*** It refers to the fixed rate of interest on the swap.

9.3.1 Reasons for Growth of Swap Market

The following reasons are connected with the growth of swap market:

1. Interest rate swaps create a link between distinct markets or firms with differential access to fund sources creating globalisation of finance markets.
2. Swaps, specially interest rate swaps, provide a way to reduce the total funding cost for debt. This benefit arises from the differences in the risk premium available to the various borrowers.
3. Interest rate swap is a flexible and convenient way for companies to manage balance sheet and reduce the mismatch between the maturities of assets and liabilities.
4. Swaps are desirable because they minimise the costs of regulations and tax loans.
5. The needs of the parties in a swap transaction are diametrically different. Swaps are not traded or listed on exchanges but they do have an Over-The-Counter (OTC) market and are traded among dealers.

9.3.2 Limitations of Swap Market

There are some limitations of swap market which are as follows:

1. The Swap deal cannot be terminated without the agreement of the parties involved in the transactions.
2. Swap are not easily tradable as a result of very slow development of standardised documentation.
3. It is difficult to identify a counter-party to take the opposite side of the transaction.

9.3.3 Swap Market Terminology

Swap market terminology is mentioned below:

- ***Trade Date:*** It is the date on which swap is entered into. This is the date when both the parties have agreed for a swap.
- ***Effective Date:*** Effective date is the date when the initial fixed and floating payments begin. Effective date is also called value date. If the effective date falls two days after the trade date, then it is called spot date. The maturity of a swap contract is computed from the effective date.

Notes

- ***Reset Date:*** The applicable LIBOR for each period is to be determined before the date of payment. It is usually determined before the commencement of the applicable period. Generally for the first payment, the LIBOR rate applicable will be set at the trade date if the value date is two days after the trade date. The first reset date will generally be two days before the 1st payment date, the second reset date will be two days before the 2nd payment date and so on.
- ***Maturity Date:*** The date on which the interest accrual stops.
- ***Assignment Broker:*** Market maker in swaps.
- ***LIBOR:*** London Inter Bank Offered Rate, which is a rate decided on daily basis based on a sample of lending rates offered by leading banks in London. The 6-month LIBOR is mostly used for swaps implying that this is the rate payable for borrowing US dollars for six months in London.

Self Assessment

State whether the following statements are true or false:

5. Swaps are mutual obligations among the swap parties.
6. A swap broker is also called a market maker.

9.4 Interest Rate Swaps

An interest rate swap is a contractual agreement entered into between two counterparties under which each agrees to make periodic payment to the other for an agreed period of time based upon a national amount of principal (IRS). The two parties that agree to exchange the cash flows are called counterparties of the swap. The principal amount is notional because there is no need to exchange actual amounts of principal in a single currency transaction: there is no foreign exchange component to be taken account of. Equally, however, a notional amount of principal is required in order to compute the actual cash amounts that will be periodically exchanged.

It is important to note two points:

- There is no exchange of principal amount either initially or on maturity, as the notional principal amount is the same.
- On each interest payment date, only the net amount will be paid/received by the counterparties.

Thus, an interest rate swap is a financial contract between two parties exchanging or swapping a stream, of interest payments on a notional principal amount on multiple occasions during a specified period. Such contracts generally involve the exchange of a fixed-to-floating or floating-to-floating rates of interest. Accordingly, on each payment date, that occurs during the swap period, a cash payment based on the differential between fixed and floating rates, is made out by one party involved in the contract to another.

9.4.1 Characteristics of Interest Rate Swaps

Interest rate swaps have the following characteristics:

1. Effectively converts a floating rate borrowing to fixed rate or vice-versa.
2. Structured as a contract separate from the underlying funding.
3. Principal repayment obligations are not exchanged i.e. the principal amount is only notional.

Notes

4. Can be applied to either new or existing borrowings.
5. They are off-balance sheet instrument.
6. On each interest payment date only the net interest differential is paid/received by counterparties on each interest payment date.
7. The frequency of payment reflects the tenor of the floating rate index.
8. Involves exchange of interest obligations between two parties at regular intervals over the life of IRS.

Advantages of IRS

The advantages of IRS are given below:

1. To obtain lower cost funding.
2. To hedge interest rate exposure.
3. To obtain higher yielding investment assets.
4. To create types of investment assets not otherwise obtainable.
5. To implement overall asset or liability management strategies.
6. To take speculative positions in relation to future movements in interest rates.
7. They are used to hedge interest rate risks as well as to take on interest rate risks.
8. They are a versatile financial tool used in global financial markets. IRS provides flexibility in asset and liability management and allows banks and companies to convert assets and liabilities from one interest rate basis to another.
9. IRS can be used as a cost – cutting device, while leaving the underlying source of funds unaffected. Treasurers can use the interest rate swap market to manage existing liabilities as well as swap off a new issue.
10. Help counterparties to take advantage of current or expected future market conditions.
11. Corporations employ interest rate swaps to dynamically change their financing structure from floating rate exposure to fixed, and vice versa.
12. Swaps can also more precisely match financing risks with operational risks.
13. Swaps can be used to lengthen or shorten the average maturity of a portfolio or liability structure.

9.4.2 Plain Vanilla Interest Rate Swaps

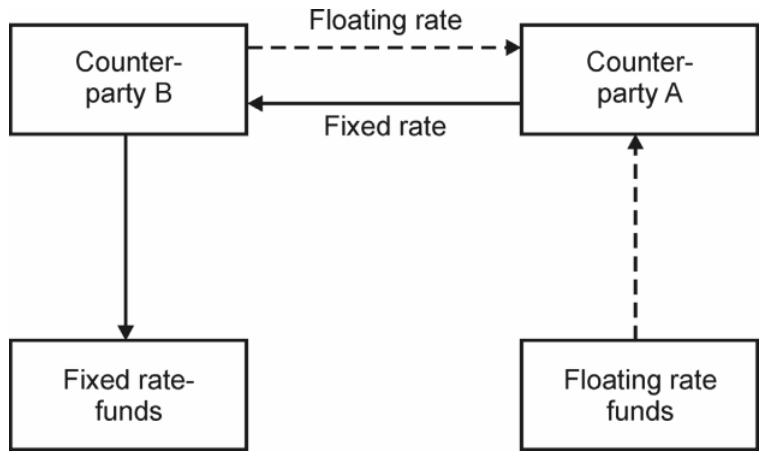
The most often used interest rate swap is called the 'plain vanilla swap'. Plain vanilla swaps are typically an exchange of floating rate interest obligations for fixed rate interest obligations. The plain vanilla swap involves an agreement between parties to exchange periodic payments calculated on the basis of a specified coupon rate and a mutually agreed notional principal amount. The counterparties in the swap are the payer and the receiver of the fixed rate.

Thus, a plain vanilla swap is an agreement between two parties in which each contracts to make payments to the other on particular dates in the future till a specified termination date. One party, known as the fixed rate payer, makes fixed payments all of which are determined at the outset. The other party known as the floating rate payer will make payments the size of which depends upon the future evolution of a specified interest rate index (such as the 6 month LIBOR).

Notes

Figure 9.3 gives an example of a plain vanilla swap. The principal is $15 million and the life of the swap is 6 years. The two counterparties in this swap deal are counterparty A and counterparty B. Counterparty A has borrowed funds in the floating rate market but wants to pay interest at a fixed rate. On the other hand, counterparty B has borrowed funds in the fixed rate market, but when he sees interest rate declining, he decides to swap some of this fixed rate borrowings for floating rate. Hence, in the above example counterparty A is the fixed rate payer while counterparty B is the fixed rate receiver. An interest rate swap in the above deal helps in transforming one type of interest rate obligations into another enabling the participants to adjust their interest rate obligations.

Figure 9.3: A Generic/Plain Vanilla Swap: $15 million, 6 Years



Also, no payments corresponding to the principal amounts are involved in the transaction. The only exchange that is made is interest payments on the principal.

9.4.3 Types of Interest Rate Swaps

Different types of interest rate swaps are discussed below:

1. ***Basis Swap:*** A swap in which a stream of floating interest rates are exchanged for another stream of floating interest rates, is known as basis swap.
2. ***Forward Swaps:*** Forward swaps are those swaps in which the commencement date is set at a future date. Thus, it is possible to lock the swap rates and use them later as and when needed. Forward swaps are also known as deferred swaps (different from deferred rare swaps) as the start date of the swap is delayed.
3. ***Putable Swaps:*** A putable swap gives the seller of the swap (the floating rate payer) the chance to terminate the swap at any time before its maturity. If the interest rates rise, the floating rate payer will terminate the swap.
4. ***Rate Capped Swaps:*** An interest rate swap, which incorporates the cap feature, is called a rate capped swap. If a floating rate Payer anticipates a rise in interest rates then he can purchase a cap at a free payable up front to the fixed rate payer so that the floating payable cannot exceed the capped rate.
5. ***Deferred Rate Swaps:*** A differed rate swap allows the fixed-rate payer to enter into a swap at any time up to a specified future date. In the swap the fixed rate payer can defer the payment until a time when the rates are lower so that he ends up paying less than what would have been paid, at the rate on the commencement date.

Notes

6. ***Callable Swaps:*** A callable swap gives the holder, i.e. the fixed-rate payer, the right to terminate the swap at any time before its maturity.

7. ***Extendible Swaps:*** In an extendible swap, the fixed rate payer gets the right to extend the swap maturity date.

Example: Consider two companies A and B. Company B has a higher credit rating than company A and can, therefore, raise funds at lower costs in both the fixed rate and floating rate debt markets. Company B, however, has a greater relative cost advantage over company A in the fixed rate market than in the floating rate market (95 basis points versus 12.5 basis points). It would, therefore, be mutually advantageous for company A to obtain floating rate funding and for company B to obtain fixed rate funding and then to enter into a swap arrangement.

Company A wants to obtain medium term four years financing at a fixed rate. In case A were to float fixed four year bonds, it would have to pay interest @11.70%. An alternative available to the company is to get a term loan at LIBOR + 3/8%.

Company B, simultaneously, wants to borrow floating rate dollars. It can float fixed bonds @10.75%. Alternatively, it could borrow 6 months floating rate dollars in the interbank market at LIBOR $+\frac{1}{4.25}$. Company B can borrow fixed rate dollars in the market at 95 basis point below the rate that company A would have to pay. Company B has privileged access to fixed rate funds vis-à-vis company A.

	Company A	Company B	Differential
Fixed	11.70 %	10.75 %	95 Basis Points
Floating	LIBOR+ 3/8 %	LIBOR+ ¼ %	12.5 Basis Points

The two companies enter into a swap in the following manner:

- A borrows floating rate funds at LIBOR +3/8 and sells it to B at LIBOR.
- B borrows fixed rate money at 10.75% and sells it to A at 11.00%.

In this manner, both companies are able to raise funds in the market in which each desires. A gains (.70 – 0.375) 32.5bp and B gains (0.25 + 0.25) 50 bp. The savings is more than what would have been obtained had each company accessed the market directly. The combined savings when both the firms grow simultaneously is 82.5 bp. Such an arrangement is beneficial to both the parties concerned.

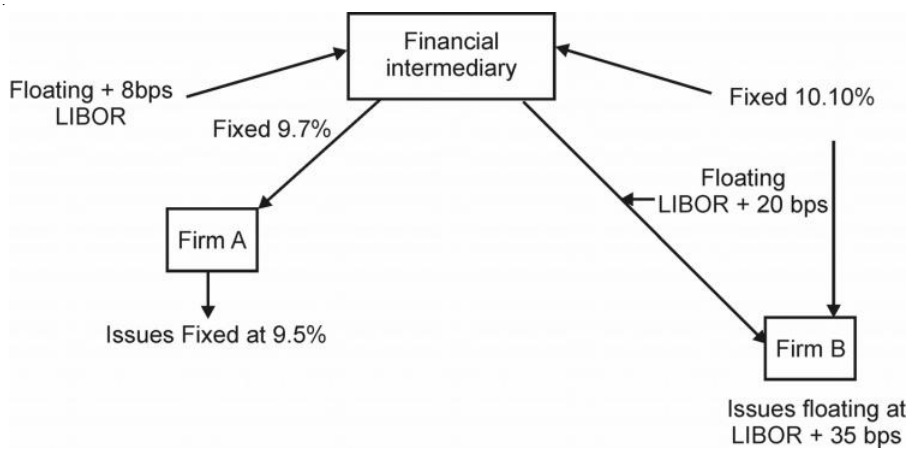
Company A which was in the market for fixed rate funds, is able to obtain the funds at 11 per cent instead of 11.70 per cent. Company B which was seeking funds at a floating rate, is able to obtain the funds at LIBOR instead of LIBOR $+\frac{1}{4.25}$ per cent.

Example: Firm A can issue US dollar denominated fixed rate debt at 9.5 per cent or floating rate debt at LIBOR plus 15 basis points (bps). Firm B which is less credit worthy can issue dollar denominated fixed rate debt of the same maturity at 10.4 per cent or floating rate debt at LIBOR plus 35 bps.

	Firm A	Firm B	Differential
Fixed	9.5%	10.4%	90bps
Floating	LIBOR + 15 bps	LIBOR + 35 bps	20 bps
			70 bps

Notes

Figure 9.4



Firm A	Firm B
Pays 9.5%	LIBOR + 35bps
	LIBOR + 8bps
	10.10%
Receives 9.7%	LIBOR + 20bps
Net. LIBOR – 12 bps	10.25%

The difference in the credit risk premiums in the fixed and floating debt markets are 90 bps and 20 bps respectively. Thus, the difference in the fixed market is greater than the difference in the floating market. Also Firm A has a credit advantage in both markets, but a comparative advantage in the fixed market. As shown in Figure 9.4, 70 bps represent the gain from the swap which is distributed among the two firms and the swap intermediary.

Assume that firm A issues fixed rate debt at 9.5 per cent and firm B issues floating-rate debt at LIBOR plus 35 bps. The two companies and the intermediary enter into a swap in the following manner.

Firm A pays the intermediary a floating rate of LIBOR plus 8 bps and the intermediary pays A a fixed rate of 9.7 per cent. Firm B pays the intermediary a fixed rate of 10.10 per cent and in return receives a floating rate of LIBOR plus 20 bps from the intermediary. The net payments to the two firms are shown in Figure 9.4.

The result of the swap is that firm A has effectively issued floating rate debt at LIBOR-12 bps, saving 27 bps from issuing floating rate debt directly. Firm B has effectively issued fixed rate debt at 10.25 per cent saving 15 bps from issuing fixed rate debt directly. The intermediary reaps 28 bps: + 40 bps on the fixed rate debt and – 12 bps on the floating rate debt. Hence the total gain from the swap to all parties is 70 bps.

9.4.4 Interest Rate Swaps – The Indian Scenario

Rupee derivatives – interest rate swaps and forward rate agreements – are now an integral part of the domestic money and debt markets. However, to begin with, these products can be offered as plain vanilla products only. One of the salient features of a generic or plain vanilla swap is that the first leg remains fixed throughout the life of the swap deal but the second leg floats with the chosen reference rate.

Notes

A benchmark rate, therefore, plays an important role in the growth and development of the interest rate swap market. The Reserve Bank of India has permitted counterparties to use any domestic interest rate as the benchmark, provided it is market determined, transparent and mutually acceptable.

Did u know? The Mumbai Inter-Bank Offered Rate (MIBOR) being compiled by Reuters and the National Stock Exchange, has been used as benchmark in all the interest rate swap deals reported so far.

Caselet

SBI-HUDCO Enter into Yen-swap Deal

State Bank of India has entered into a long-term Rupee-Yen swap deal with Housing and Urban Development Corporation (HUDCO).

According to a press release, HUDCO has swapped its foreign currency liability of Yen 2.89 billions for equivalent Rupee resources with SBI for a tenor of 10 years. Under the arrangement, HUDCO will deposit its Yen with SBI on the day of transaction, and SBI in return will pay the equivalent Rupee resources to HUDCO.

According to officials, the swap will be done at the prevailing exchange rate on the day of the transaction. And HUDCO will use the rupee resources for the purpose of lending to their projects in India. The overseas branches of SBI in Japan will use Yen to fund their own assets. As per the swap agreement, SBI would provide the long-term hedge to HUDCO for a period of 10 years to cover the exchange risk of the foreign liability.

As a result of this, the swap will neutralize both the exchange rate risk and interest risk of HUDCO on Yen loan by converting the Yen flows into risk neutral-fixed interest rate Rupee flows for the company. At the end of 10 years, HUDCO will take back the Yen by giving the Rupee equivalent to SBI.

Earlier SBI had struck a Rupee-Dollar swap of sizable transaction with ICICI. At present, the bank is considering similar deals with companies, which do not have international presence to manage the foreign currency risk effectively.

The bank is actively involved in developing the derivative market in India by facilitating the use of hedging instruments such as currency swaps. This has been possible after the permission was granted by the Reserve Bank of India to enable corporates to obtain suitable hedge for their exposures arising out of their foreign currency loans.

Source: *International Financial Management*, Madhu Vij, Excel Books.

Self Assessment

State whether the following statements are true or false:

7. The first interest rate swap appeared in London in 1982.
8. An interest rate swap is a financial contract between two parties exchanging or swapping a stream, of interest payments.
9. Interest rate swaps are a type of derivatives.
10. In forward swaps commencement date is set at a future date.

Notes

11. In an extendible swap, the fixed rate payer gets the right to extend the swap maturity date.

12. The interest rate swap involves the exchange of principal amounts.

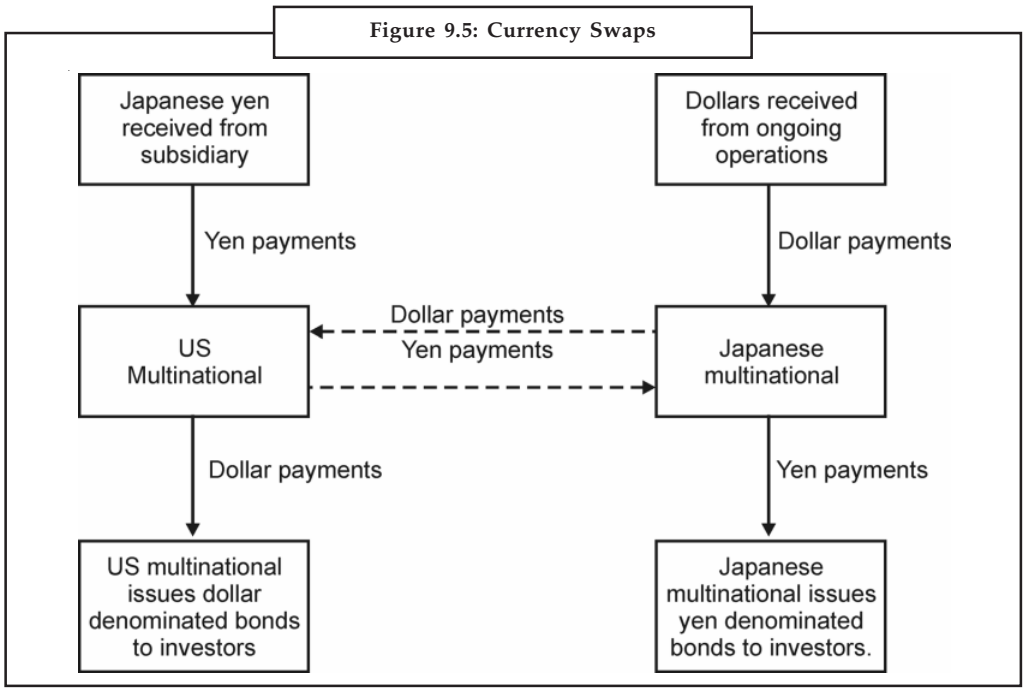
9.5 Currency Swaps

A currency swap is a contract to exchange interest payments in one currency for those denominated in another currency. The currency swap developed from back-to-back loans and parallel loans and also functions virtually in the same manner. At present, the currency swap market, although older than the interest rate market, is smaller and less sophisticated.

A standard currency swap entails the exchange of debt denominated in one currency for debt denominated in another currency. Consider an example. Assume that a US multinational company wants to issue a yen denominated bond so that it can make payments with yen inflows generated by a Japanese subsidiary. Also, suppose there exists a Japanese multinational that wants to issue dollar denominated debt. The US multinational could issue dollar debt while the Japanese multinational issues yen debt. The US MNC would then provide yen payment, both principal and interest to Japanese MNC in exchange for dollar payment. The swap of currencies allows the two MNCs to make payments to their respective debt holders without having to repatriate foreign exchange.

Thus, both the multinationals have reduced their exposures through the swap transactions. Figure 9.5 illustrates this currency swap.

Figure 9.5: Currency Swaps



9.5.1 Various Forms of Currency Swaps

The various forms of currency swaps are discussed below:

1. ***Cross-currency Fixed-to-fixed Swap:*** The motivation for this type of swap is that each of the two counterparties have access to cheap funds in different countries. Each counterparty can raise funds in the country in which they have advantage and enter into a swap whereby the payments are transformed into the currency that they prefer.

Notes

2. ***Cross-currency Floating-to-fixed Swap:*** Often a non-US dollar based bank has medium-term floating assets denominated in dollars. The bank needs to fund its medium-term floating dollar assets with medium-term floating dollar liabilities. However, it can only raise funds cheaply on a fixed rate basis in its domestic currency. A swap is a way to solve this problem. For example, counterparty A is domiciled in the United States, and counterparty B is domiciled in Switzerland. In this case, counterparty A is in a position to borrow cheaply in US dollar on a floating rate basis and counterparty B is in a position to borrow cheaply on a fixed rate basis in Swiss francs. Each counterparty can use its comparatively strong borrowing capacity to reduce the overall cost of funds by entering into a currency swap.

   Counterparty A can borrow floating rate funds in the US dollar money market at LIBOR plus a margin. Counterparty B can borrow fixed rate funds cheaply in Swiss francs by way of a bond issue. During the swap, counterparty B can pay floating rate dollars to Counterparty A to service the dollar loan. Counterparty A can pay fixed rate Swiss francs to counterparty B to service the Swiss francs loan.

3. ***Cross-currency Floating-floating (Basis) Swaps:*** This type of currency swap is used as an alternative to the foreign exchange market. It does not tend to be widely used because of capital adequacy requirements, but it is certainly worth knowing how to use it. Its main advantage is that the counterparties can obtain a term commitment which would roll over an effective forward foreign exchange contract according to an agreed period.

4. ***Basis Swaps:*** Basis swaps involve an exchange of floating rate payments calculated on different basis. The structure of a basis swap is the same as the straight interest rate swap, with the exception that floating interest calculated on one basis is exchanged for floating interest calculated on a different basis. Examples of basis swaps include LIBOR-LIBOR (3 months against 6 months, etc.), Prime-LIBOR and CP-LIBOR.

5. ***Amortizing Swaps:*** Amortizing swaps are very popular for lease based transaction where the principal reduces annually or even more frequently. For example, Company A has borrowed $9 million to buy a building. They have agreed with their bankers to pay back the loan, principal plus interest at 8.50% fixed, over 3 years. Company A thinks that interest rates are going to fall over the period and thus would prefer to pay a floating rate rather than fixed rate. Company A can enter into a swap with the bank in which the notional principal decreases on each of the amortization dates.

6. ***Roller-coaster Swaps:*** A variation on the amortizing swap is the roller-coaster swap where the principal involved increases and decreases over the life of the swap.

7. ***LIBOR Adjustments and Off-market Coupons:*** An off-market coupon or non-par value swap is one which has a fixed rate above or below the currency market rate. In this case, an up-front payment is made which is equal to the present value of the annuity based on the difference between the off-market coupon swap rate and the current market rate, multiplied by the notional principal amount.

8. ***LIBOR-in-arrears Swaps:*** In a generic swap, LIBOR is normally set 6 months and 2 days before a payment date; however, it is possible to structure a swap so that LIBOR is fixed 2 days before the payment date. This structure may be advantageous when the yield curve is positively sloped and the implied forward rates are higher than the physical yield curve, but at the same time, the swap user expects that short-term rates will remain stable or decrease.

9. ***Participation Swaps:*** The participation swap is a new hybrid product, which incorporates the advantages of the swap and cap/floor products. Under this arrangement, an interest rate swap is transacted to cover a portion of the notional principal and an interest rate cap is transacted to cover the remainder of the notional principal. The fixed rate on the swap

Notes

and the strike price on the cap are identical. The term and periodicity of the cap and swap are also identically matched. There is no up-front premium payable.

10. ***Zero-coupon Swaps:*** Like a zero-coupon bond, the player in a zero-coupon swap will make only one fixed payment at maturity. The ultimate fixed payment is a single forward rate based on the compounding of the immediate cash flows at the swap rate. This structure is most commonly used in conjunction with zero-coupon bond issues, so the issuer's net cash flow is almost identical to what it would have been if it had issued a low cost coupon floating rate instrument.

11. ***Commodity Swaps:*** Innovations in the swap market have enabled users to link the transactions to various floating indices. Commodity swaps have proven to be such an innovation. Commodity swaps work the same way as interest rate swaps except the floating index is based on commodity, most commonly gold, oil or wheat. It is a useful hedging tool for manufacturers which require a certain commodity for the production of their goods, yet are exposed to an increase in the price of the commodity.

Task Review the annual report of an MNC of your choice. Did the MNC enter into a swap deal in the recent past? Explain how the MNC benefited from the swap deal. Also perform a forecasted scenario analysis to show how the MNCs would fare in the coming years.

Self Assessment

Fill in the blanks:

13. The earliest swaps were ..... .

14. A ..... entails the exchange of debt denominated in one currency for debt denominated in another currency.

15. The most important reason for firms using currency swaps has been ..... and hedging.

Case Study

China Currency Swaps and Prepping for the Last Monetary Frontier

China seems to be waiting patiently in the wings, as the U.S. Dollar may be starting its next decent just in time for another EU crisis to emerge. China has been negotiating currency swaps in preparation for the day it must intervene on the world monetary front, perhaps making its currency the Yuan a defacto candidate for reserve currency status as the Dollar's fortunes decline.

Currency Swaps

Currency swaps are typically motivated by comparative advantage, and the term can refer to two different types of transactions as follows:

- In the foreign exchange market, a currency swap is an agreement between counterparties to exchange one currency for another on one value date and then reverse the transaction on another value date.

Contd...

Notes

- In the interest rate swap market, a currency swap can also refer to the exchange of principal and/or interest payments of a loan in one currency for an equivalent loan in another currency. This sort of currency swap should be distinguished from a liquidity swap performed by a central bank.

Central Bank Liquidity Swaps

In the 2008 global financial crisis, the Fed used forex currency swap transactions to enter into central bank liquidity swaps. In these foreign exchange deals, the Fed and the central bank of another major economy agreed to exchange their national currencies at the prevailing market exchange rate and simultaneously agreed to reverse the transactions at the prevailing forward market exchange rate on a specified future delivery date.

The stated goal of these central bank liquidity swaps was to "to provide liquidity in U.S. dollars to overseas markets." Although central bank liquidity swaps and forex currency swaps are structurally identical, currency swaps are commercial transactions driven by comparative advantage, while central bank liquidity swaps instead represent emergency loans of U.S. Dollars to foreign markets via their respective central banks.

It is currently undetermined if these transactions will benefit the U.S. Dollar or the United States over the long run, although they do represent an extension of credit to overseas nations.

China's Currency Swap Lines

China has recently made a well-publicized series of currency swap deals with other major economies, such as the UK and France, over the past three years.

Regarding China's recent currency swap line deal with France, Bank of France governor Christian Noyer reportedly said that, "The Bank of France has been working on ways to develop a RMB liquidity safety net in the euro area with due consideration of a supporting currency swap agreement with the People's

Bank of China". Note here that the Renminbi is the Chinese currency, but the Yuan is its unit of account, so it is referred to by the currency code RMB.

In doing such swap deals, the country apparently intends to promote the more widespread use of the Chinese Renminbi in foreign trade and investment, although the currency still remains officially and intentionally undervalued due to forex market intervention by the People's Bank of China.

The Chinese are also stealthily buying gold, and China has become a net importer of silver too, along with just about anything else of real value the country can get its hands on to avoid being left with a pile of paper in the case of a fiat currency devaluation crisis.

China has Its Own Problems

The threat of a deflationary collapse in the Chinese economy seems to be growing. Another important issue is the growth of China's own huge credit bubble.

The Chinese seem to be playing it cool, perhaps waiting until the BOJ's recent money printing experiment ultimately fails. This already appears to be happening, as evidenced by the Japanese equity market collapse in response to the latest version of Abenomics.

In essence, this survival move on China's part will be seen as a threat to other nations due to the emerging Chinese economy's massive size.

China is Not an Enemy

The Chinese depend on the United States to buy their cheap products as much as Americans depend on the Chinese to make cheap items for them to buy.

Contd...

Notes

Cheaper products are usually in greater demand in challenging financial times, while in abundant times people tend to seek out and pay up for higher quality items.

A sudden disruption to U.S. Dollar based trade would potentially set the United States and its trade position back decades, and preparation for this day's ultimate arrival has been happening for years.

Nevertheless, too many systems at the heart of survival and functioning depend on a stable financial trade mechanism. In the end, the only budget that matters is yours, and it is also the only place where you have some control. This remains the one to study, plan and forecast for.

Questions

1. Critically analyse the above case.
2. How will currency swaps aid China in promoting trade?
3. Are there any other alternatives available to china to gain multi-dimensional advantages?

Source: http://www.silverdoctors.com/china-currency-swaps-and-prepping-for-the-last-monetary-frontier/

9.6 Summary

- Swaps are essentially a derivative used for hedging and risk management.
- The basic idea behind swaps is that the parties involved get access to markets at better terms than would be available to each one of them individually.
- There are various kinds of swaps, but interest rate swaps and currency swaps have mainly been developed to resolve some of the problems associated with back-to-back and parallel loans.
- Interest rate swaps are a flexible and convenient way for companies to manage their balance sheet and reduce the mismatch between the maturities of assets and liabilities.
- They owe much of their existence to the theory of comparative advantage.
- A currency swap is a contract involving exchange of interest payments on a loan in one currency for fixed or floating interest payments on equivalent on a loan in a different currency.
- Currency swaps may or may not involve initial exchange of principal.

9.7 Keywords

Basis Swaps: Basis swaps involve an exchange of floating rate payments calculated on different basis.

Callable Swaps: A callable swap gives the holder, i.e. the fixed-rate payer, the right to terminate the swap at any time before its maturity.

Commodity Swaps: Innovations in the swap market have enabled users to link the transactions to various floating indices.

Extendible Swaps: In an extendible swap, the fixed rate payer gets the right to extend the swap maturity date.

Putable Swaps: A putable swap gives the seller of the swap (the floating rate payer) the chance to terminate the swap at any time before its maturity.

Notes

***Roller Coaster Swaps*:** A variation on the amortizing swap is the roller-coaster swap where the principal involved increases and decreases over the life of the swap.

9.8 Review Questions

1. What do you understand by the terms: currency swaps and interest rate swaps? List the main factors behind the phenomenal growth in the swap market in recent years.
2. "Swaps are risk-management instruments; yet they give rise to certain risk themselves". Elucidate with examples.
3. Why do firms use currency swaps? Explain with examples.
4. What do the following terms mean:

   (a) Cross currency swap, (b) Plain vanilla swap, and (c) Zero coupon swap.
5. Are interest rate swaps popular? Elucidate.
6. Briefly discuss the advantages of swaps as an asset-liability management technique.
7. Why have currency swaps generally replaced parallel and back-to-back loan?
8. What is the difference between a plain vanilla currency swap and a plain vanilla interest rate swap?
9. What is the difference between parallel loan and a back-to-back loan?
10. Why do companies go in for interest rate swaps? Give the advantages of Interest rate swaps.

Answers: Self Assessment

1.	True	2.	False
3.	True	4.	Offsetting needs
5.	True	6.	True
7.	True	8.	True
9.	True	10.	True
11.	True	12.	False
13.	Currency swaps	14.	Standard currency swap
15.	Cost reductions		

9.9 Further Readings

Books

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Bhalla, V.K. *International Financial Management*, Anmol Publishers.

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Notes

Online links

http://athene.mit.csu.edu.au/~hskoko/subjects/fin340/lect06.pdf

http://finance.wharton.upenn.edu/~bodnarg/courses/nbae/IFM/Chapter14.pdf

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Notes

Unit 10: Management of Operating/Economic Exposure

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10.6 Keywords

10.7 Review Questions

10.8 Further Readings

Objectives

After studying this unit, you will be able to:

- Explain the foreign currency hedging strategies
- Discuss the procedure for measuring economic exposure
- Elaborate the corporate philosophy for exposure management
- Discuss the illustrations for better understanding of economic exposure

Introduction

Economic exposure measures the impact of an actual conversion on the expected future cash flows as a result of an unexpected change in exchange rates. An MNC may have established its subsidiary in a country with price stability, favorable balance of payments, low rates of taxation and readily available funds. However, if the economic situation of the country were to deteriorate, these positive aspects may get reduced over time and the local currency will depreciate. The subsidiary is likely to face immediate problems if it has to pay its imports in hard currencies and in case it has borrowed from abroad. This will put the subsidiary at a competitive disadvantage. For example, a British exporter who operates in the Indian market can increase his market share merely by reducing the Indian prices of his products if the Indian rupee becomes strong against the UK pound. Conversely, if the Indian rupee weakens against the British pound, the Indian company which is a potential competitor to the British company can profit indirectly from currency losses of the British company. Thus, even though the Indian company is not directly exporting, yet competition in the business can be generated on account of the strength of the currency of competitors.

Notes

10.1 Foreign Currency Hedging Strategies

There are several financial strategies which can be used to minimise exchange risks. An MNC can hedge its foreign exchange exposure in a number of ways. One method involves the interbank market which offers spot and forward transactions. These contracts specify the purchases and sale of currencies at a certain price, either for immediate or future delivery. If the company wants a standardised contract, it may choose to buy (sell) either a futures contract or an options contract. The standardisation feature provides market liquidity, making it easy to enter and exit the market at any time.

Notes For an MNC with a network of subsidiaries, subsidiaries with strong currencies should delay or lag the remittances of dividends, royalties and fees to other subsidiaries. Those in weak currency countries should try to lead, or promptly pay their liabilities and reduce their asset exposure.

Foreign currency hedging is a risk reducing strategy. Like all hedging strategies, it involves taking two offsetting, opposite positions, in two different parallel markets. In general the firm can choose between internal and external hedges. Internal hedges include leading and lagging of payments and foreign currency accounts while external hedges include derivatives such as forwards, futures, options and swaps. Forward FX contracts (FEC) are the simplest of the external hedges and the most used. The popularity may be partly explained by their simplicity of use, over the counter trading that permits exact specifications regarding dates and amounts and minimal explicit cost.

10.1.1 Internal Hedging Strategies

Internal hedging strategies are described below:

Netting

Netting is a technique of optimizing cash flow movements with the joint efforts of subsidiaries. The process involves the reduction of administration and transaction costs that result from currency conversion. Netting, as a technique of optimizing cash flows, has become important in the context of a highly coordinated international interchange of materials, parts and finished products among the various units of the MNC with many affiliates both buying from and selling to each other. The important point here is that there is a definite cost associated with cross-border fund transfer, including the cost of purchasing and conversion of foreign exchange. Netting helps in minimising the total volume of intercompany fund flow.

Leading and Lagging

It is a technique that manipulates accounts receivable and accounts payable to take advantage of exchange rate fluctuations. This is a speculative technique and the rule is to lead out of and lag into the weak currency, and lead into and lag out of the strong currency.

Caution MNCs can accelerate (lead) or delay (lag) the timing of foreign currency payments by modifying the credit terms extended by one unit to another. Leading and lagging is adopted by MNCs in order to reduce foreign exchange exposure or to increase available working capital.

Notes

Companies generally accelerate the payments of hard currency payables and delay the payments of soft currency payables so as to reduce foreign exchange exposure. Thus, companies use the lead/lag strategy to reduce transaction exposure by paying or collecting foreign finance obligations early (lead) or late (lag) depending on whether the currency is hard or soft. The act of leading and lagging reflects the expectations about the future currency movements by the MNCs.

10.1.2 External Hedging Strategies

These strategies can be understood in the following manner:

Currency Futures

A currency future is the price of a particular currency for settlement at a specified future date. Currency futures are traded on future exchanges and the exchanges where the contracts are fungible (or transferable freely) are very popular. The two most popular future exchanges are the Singapore International Monetary Exchange (SIMEX) and the International Money Market, Chicago (IMM). Other exchanges are in London, Sydney, Frankfurt, New York, Philadelphia, etc.

Futures contracts are traded on an exchange through brokers. The contracts are standardised with respect to the quality and quantity of the underlying asset, the expiration date and where and how delivery is made. Futures are rarely closed with the delivery of the underlying asset – buyers and sellers usually prefer to close their contract by reversing their positions on the market. In other words, buyers of a futures contract sell another futures contract with the same characteristics, while sellers of a futures contract buy another futures contract which has the same characteristics. By reversing their positions, buyers or sellers close their positions. Any gain or loss obtained from closing the futures contract is used to offset losses or gains on the actual market.

Currency Forwards

A Forward contract is a negotiated agreement between two parties. They are tailor-made contracts that are not traded on organised exchanges and are useful to cover forward receivables and payables where the exact date of such transactions is not fixed or known. Forwards do not require an initial payment when signing the contract (except for a minor administrative fee, if the other party is a financial institution) and are generally closed with the delivery and payment of the underlying asset.

Options

Options are basically derivative instruments that derive their values from the underlying instrument that they represent. There are two types of options: call options and put options. A call option gives the buyer the right, but not the duty, to purchase an underlying asset, reference rate or index at a particular price before a specified date. A put option gives the buyer the ability, but not the obligation, to sell an underlying asset, reference rate, or index at a particular price to a specified date.

Options trade both in organised exchanges and over-the counter and a large amount of option trading is conducted privately between two parties who find that contracting with each other is preferable. They can be standardised or tailor-made. Options could be of two types – European and American style. American style option is one which can be exercised by the buyer on or before the expiration date. The European kind of option is one which can be exercised by the buyer on the expiration day only and not anytime before that.

Options are different from forwards and futures in that they give their holder the right – and not the obligation – to buy or sell the underlying instrument. This right or privilege conveys to the buyer an advantage over the seller, since the buyer decides whether to exercise the option or not. The seller must either sell the underlying instrument at the striking price if he or she has sold a call option, or buy the underlying instrument at the striking price if he or she has sold a put option. The buyer will pay a premium to the seller for the privilege.

If a business plans to purchase an asset and expects the price to increase, then he or she can use buying a call option to hedge against an increase in the price of the underlying asset, without losing the advantages of a price decline. If the price was to decline, the buyer would simply not exercise the option; he or she would then trade the underlying asset at the cash market price. In contrast, buying a put option can be used to hedge against a reduction in price in the underlying asset without losing the advantage of a price increase.

Swap

A swap is a contract between two counterparties to exchange two streams of payments for an agreed period of time. They may be of two types – currency swap and interest rate swap.

Currency Swap: It is referred to a simple swap of currencies between two firms in two countries. A currency swap stays off the books because it does not involve interest, gains, or losses.

Interest Rate Swap: An interest rate swap is a contractual agreement entered into between two counterparties under which each agrees to make periodic payment to the other for an agreed period of time based upon a national amount of principal. The principal amount is notional because there is no need to exchange actual amounts of principal in a single currency transaction: there is no foreign exchange component to be taken account of. Equally, however, a notional amount of principal is required in order to compute the actual cash amounts that will be periodically exchanged.

Thus, an interest rate swap is a financial contract between two parties exchanging or swapping a stream, of interest payments on a notional principal amount on multiple occasions during a specified period. Such contracts generally involve the exchange of fixed-to-floating or floating-to-floating rates of interest. Accordingly, on each payment date that occurs during the swap period a cash payment based on the differential between fixed and floating rates, is made out by one party involved in the contract to another.

Money Market Hedge

A Money Market Hedge involves simultaneous borrowing and lending activities in two different currencies to lock in the home currency value of a future foreign currency cash flow. The simultaneous borrowing and lending activities enable a company to create a home-made forward contract.

The firm seeking the money market hedge borrows in one currency and exchanges the proceeds for another currency. If the funds to repay the loan are generated from business operation then the money market hedge is covered. Otherwise, if the funds to repay the loan are purchased in the foreign exchange spot market then the money market hedge is uncovered or open.

Thus a money market hedge involves taking a money market position to cover a future payables or receivables position. For payables the two strategies could be:

1. Borrow in the home currency (optional)
2. Invest in the foreign currency

Notes

For receivables:

1. Borrow in the foreign currency
2. Invest in the home currency (optional)

Suppose that on January 1, GE is awarded a contract to supply turbine blades to Lufthansa, the German airline. On December 31, GE will receive payment of DM 25 million for this contract. Further, suppose that DM and US $ interest rates are 15% and 10% respectively. Using a money market hedge, GE will borrow DM 25/1.15 million = DM 21.74 million for one year, convert it into $8.7 million in the spot market (spot exchange rate is DM 1 = $0.40) and invest them for one year. On December 31, GE will receive 1.10 × $8.7 million = $9.57 million from its dollar investment. GE will use these dollars to pay back the 1.15 × DM 21.74 million=DM 25 million it owes in interest and principal.

Problem 1:

Assume that a MNC has net receivables of 100,000 Canadian dollars in 90 days. The spot rate of the C$ is $.60, and the Canada interest rate is 2% over 90 days. Suggest how the MNC could implement a money market hedge.

Solution:

The appropriate technique to achieve a covered money market hedge is:

1. Borrow an amount of Canadian Dollars such that the future receivables can be used to repay the loan

$$C\$ = \frac{100000}{1 + .02}$$

$$= 98{,}039.22$$

2. Sell Canadian Dollars and buy USD at the spot rate

98,039.22 × .60 = $58823.532

3. Invest the proceeds in the US for 90 days at 12% pa.

C$ = $58823.532 × (1 + .03)

= $60588.237

Problem 2:

Assume that the same MNC now has net payable of 350,000 Mexican pesos in 180 days. The Mexican interest rate is 8% over 180 days, and the spot rate of the Mexican peso is $.15. Suggest how the U.S. firm could implement a money market hedge.

Solution:

Deposit = 350000/1.08 = Mexican pesos 324074.07 into a Mexican bank so that it amounts to 350000 MXP in 180 days.

To deposit 324074.07 MXP, the MNC has to borrow 324074.07 × .15 = USD 48611.11

Forward Market Hedge

In a Forward Market Hedge, a company that is long in a foreign currency will sell the foreign currency forward, whereas a company that is short in a foreign currency will buy the currency forward. In this way, the company can fix the dollar value of future foreign currency cash flow.

Notes

If funds to fulfil the forward contract are available on hand or are due to be received by the business, the hedge is considered "covered," "perfect" or "square" because no residual foreign exchange risk exists. Funds on hand or to be received are matched by funds to be paid.

In situations where funds to fulfil the contract are not available but have to be purchased in the spot market at some future date, such a hedge is considered to be "open" or "uncovered". It involves considerable risk as the hedger purchases foreign exchange at an uncertain future spot rate in order to fulfil the forward contract.

Example: Assume the following information:

90 day U.S. interest rate = 4%

90 day Canada interest rate = 3%

90 day forward rate of Canadian dollar = $.400

Spot rate of Canadian dollar = $.405

Assume that Jason Co. in the United States will need 400,000 C$ in 90 days. The company wishes to hedge this payables position. Would it be better for the company to use forward hedge or money market hedge? Calculate estimated costs for each type of hedge.

Solution:

Money Market Hedge

Deposit 400000/1.03 = 388349 C$ into a Canadian Bank so that it amounts to 4000000 C$ in 90 days

To deposit 388349 C$, the firm has to borrow 388349 × 0.405 = USD 157281

To repay USD 157281, the firm will need 157281 × 1.04 = USD 163572 in 90 days

Forward Market Hedge

Pay out USD 400000 × 0.4 = USD 160000 in 90 days

Since the firm has to payout lesser money in a forward hedge, it should go for forward hedge.

Self Assessment

Fill in the blanks:

1. …… is a technique of optimising cash flow movements with the joint efforts of subsidiaries.
2. Leading and Lagging is a technique that manipulates accounts receivable and accounts payable to take advantage of exchange rate …….
3. A currency future is the price of a particular currency for settlement at a specified …… date.
4. An …… rate swap is a contractual agreement entered into between two counterparties under which each agrees to make periodic payment to the other for an agreed period of time based upon a national amount of principal.
5. Currency Swap is referred to a simple swap of …… between two firms in two countries.
6. The act of leading and lagging reflects the …… about the future currency movements by the MNCs.

Notes

10.2 Measuring Economic Exposure

The degree of economic exposure to exchange rate fluctuations is significantly higher for a firm involved in international business than for a purely domestic firm. Assessing the economic exposure of an MNC is difficult due to the complex interaction of funds that flow into, out of and within the MNC. Yet, economic exposure is crucial to operations of the firm in the long-run. If an MNC has subsidiaries around the world, each subsidiary will be affected differently by fluctuations in currencies. Thus, attempts by the MNC to measure its economic exposure would be extremely complex.

One method of measuring an MNC's economic exposure is to classify the cash flows into different items on the income statement and predict movement of each item in the income statement based on a forecast of exchange rates. This will help in developing an alternative exchange rate scenario and the forecasts for the income statement items can be revised. By assessing how the earnings forecast in the income statement has changed in response to alternative exchange rate scenarios, the firm can assess the influence of currency movements on earnings and cash flows.

10.2.1 Managing Economic Exposure

The following are some of the proactive marketing and production strategies which a firm can pursue in response to anticipated or actual real exchange rate changes.

Marketing Initiatives

Marketing initiatives include the following:

- ***Market Selection:*** Major strategy considerations for an exporter are the markets in which to sell, i.e., market selection. It is also necessary to consider the issue of market segmentation with individual countries. A firm that sells differentiated products to more affluent customers may not be harmed as much by a foreign currency devaluation as will a mass marketer. On the other hand, following a depreciation of the home currency, a firm that sells primarily to the upper income group may now find itself able to penetrate mass markets abroad.
- ***Pricing Strategy Market Share versus Profit Margin:*** In the wake of the rising dollar, a US firm selling overseas or competing at home against foreign imports faces a Hobson's choice: does it keep its dollar price constant to preserve its profit margin and thereby lose sales volume or does it cut its dollar price to maintain market share and, thereby, suffer a reduced profit margin? Conversely, does the firm use a weaker dollar to regain lost ground or does it use the weak dollar to raise prices and recoup losses incurred from the strong dollar?

  To begin the analysis, a firm selling overseas should follow the standard economic proposition of setting the price that maximises dollar profits (by equating marginal revenues and marginal costs). In making this decision, however, profits should be translated using the forward exchange rate that reflects the true expected dollar value of the receipts upon collection.

  Following appreciation of the dollar, which is equivalent to foreign currency devaluation, a firm selling overseas should consider opportunities to increase the foreign currency prices of its products. The problem, of course, is that local producers now will have a competitive cost advantage, limiting an exporter's ability to recoup dollar profits by raising foreign currency selling prices.
- ***Promotional Strategy:*** Promotional strategy should take into account anticipated exchange rate changes. A key issue in any marketing programme is the size of the promotional budget.

A firm exporting its products after a domestic devaluation may well find that the return per home currency expenditure on advertising or selling is increased because of the product's improved price positioning. A foreign currency devaluation, on the other hand, is likely to reduce the return on marketing expenditure and may require a more fundamental shift in the firm's product policy.

- ***Product Strategy:*** Companies can also respond to exchange rate changes by altering their product strategy, which deals with such areas as new product introduction:

  (i) Product line decisions

  (ii) Product innovations

  Following home currency devaluation, a firm will potentially be able to expand its product line and cover a wider spectrum of consumers abroad and at home. Conversely, following home currency appreciation, a firm may have to reorient its product line and target it to a higher income, more quality conscious, less price sensitive consumers.

  Equivalent strategy for firms selling to the industrial, rather than the consumer, market and confronting a strong home currency is product innovation, financed by an expanded R&D budget.

Production Initiatives

The adjustments discussed so far attempt to alter the home currency value of foreign currency values. But, sometimes, the exchange rate moves so much that pricing or other marketing strategies do not save the product.

Product sourcing and plant location are the principle variables that companies manipulate to manage competitive risks that cannot be managed through marketing changes alone.

(a) ***Input Mix:*** Outright additions to facilities overseas accomplish a manufacturing shift. A more flexible solution is to purchase more components overseas. This practice is called as outsourcing. Outsourcing gives the company the flexibility to shift purchases of intermediate inputs towards suppliers least affected by exchange rate changes.

(b) ***Shifting Production among Plants:*** Multinational firms with worldwide production systems can allocate production among their several plants in line with the changing home currency cost of production, increasing production in a nation whose currency has devalued and decreasing production in a country where there has been a revaluation.

A strategy of production shifting presupposes that a company has already created a portfolio of plants worldwide.

The cost of multiple sourcing is especially great where there are economies of scale that would ordinarily dictate the establishment of only one or two plants to service the global market. Despite the higher unit cost associated with the smaller plants, currency risk may provide one more reason for the use of multiple production facilities.

(c) ***Plant Location:*** A firm without foreign facilities that is exporting to a competitive market whose currency has devalued may find that sourcing components abroad is insufficient to maintain unit profitability. Third country plant locations is a viable alternative in many cases.

Did u know? Many Japanese firms, for example, have shifted production offshore—to Taiwan, South Korea, Singapore and other developing nations as well as to United States—in order to cope with the high Yen.

Notes

(d) ***Raising Productivity:*** Raising productivity through closing inefficient plants, automating heavily and negotiating wage and benefit cutbacks and work rule concessions is another alternative to manage economic exposure. Employee motivation can also be used to heighten productivity and improve product quality.

Self Assessment

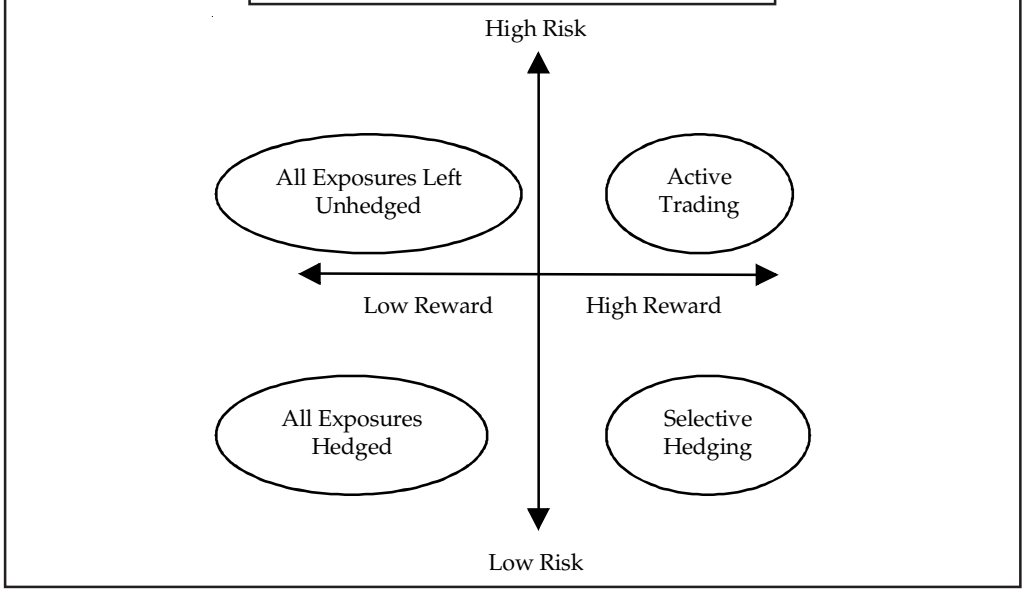
Fill in the blanks:

7. ..... strategy should take into account anticipated exchange rate changes.
8. Companies can also respond to exchange rate changes by altering their ..... strategy, which deals with such areas as new product introduction.
9. ..... motivation can also be used to heighten productivity and improve product quality.
10. A strategy of ..... shifting presupposes that a company has already created a portfolio of plants worldwide.

10.3 Corporate Philosophy for Exposure Management

As for exposure management strategies, a lot depends on the corporate philosophy of a company, in particular, its attitude towards risk. In real life risk and rewards go hand in hand: there is no low risk, high reward strategy. Apart from a company's willingness to take risks in pursuit of rewards, equally important are its financial strengths and therefore, ability to take risks, the nature of its business and its vulnerability to adverse movements and so on. In short, there can be no single strategy which is appropriate to all businesses. Four separate strategy options are feasible.

Figure 10.1: Four Separate Strategy Options



Low Risk: Low Reward

This option involves automatic hedging of exposures in the forward market as soon as they arise, irrespective of the attractiveness or otherwise of the forward rate. The merits of this

approach are that yields and costs of the transaction are known and there is little risk of cash flow destabilisation. Again, this option doesn't require any investment of management time or effort. The negative side is that automatic hedging at whatever rates are available is hardly likely to result into optimum costs. At least some managements seem to prefer this strategy on the grounds that an active management of exposures is not really their business. In the floating rate era, currencies outside their home countries, i.e., in terms of their exchange rate, have assumed the characteristics of commodities. And business whose costs depend significantly on commodity prices can hardly afford not to take views on the price of the commodity. Hence this does not seem to be an optimum strategy.

Low Risk: Reasonable Reward

This strategy requires selective hedging of exposures whenever forward rates are attractive but keeping exposures open whenever they are not. Successful pursuit of this strategy requires quantification of expectations about the future: and the rewards would depend upon the accuracy of the prediction. This option is similar to an investment strategy of a combination of bonds and equities with the proportion of the two components depending on the attractiveness of prices. In forex exposure terms, hedged positions are similar to bonds (known costs or yields) and unhedged ones to equities (uncertain returns).

High Risk: Low Reward

Perhaps the worst strategy is to leave all exposures unhedged. The risk of destabilisation of cash flows is very high. The merit is zero investment of managerial time or effort.

High Risk: High Reward

This strategy involves active trading in the currency market through continuous cancellations and re-bookings of forward contracts. With exchange controls relaxed in India in recent times, a few of the larger companies are adopting this strategy. In effect, this requires the trading function to become a profit centre. This strategy, if it is to be adopted, should be done in full consciousness of the risks.

Caselet

Economic Exposure

MK Inc is a US based MNC that conducts a part of its business in Malaysia. Its US sales are denominated in US dollars while its Malaysian sales are denominated in Malaysian dollars. Its proforma income statement for the next year is shown below. Show how the costs, revenue and earnings items would be affected by three possible exchange rate scenarios for the Malaysian dollar:

1. $ 1.45,
2. $ 1.50 and
3. $ 1.60.

Assume US sales will be unaffected by the exchange rate. Also assume that Malaysian dollar earnings will be remitted to the US at the end of the period.

Revenue and costs estimates: (MK Inc. in millions of US dollars and Malaysian dollar)

Contd...

Notes

	US Business	Malaysian Business
Sales	$1,900	M$200
Cost of goods sold	800	50
Gross Profit	1,100	150
Operating expenses	600	100
EBIT	500	50
Interest Expenses	200	70
EBT	$ 300	M$ - 20

Source: *International Financial Management*, Madhu Vij, Excel Books.

Self Assessment

Fill in the blanks:

11. High Risk: High Reward strategy involves ..... trading in the currency market through continuous cancellations and re-bookings of forward contracts.
12. Successful pursuit of Low Risk: Reasonable Reward strategy requires quantification of expectations about the future and the rewards would depend upon the ..... of the prediction.
13. ..... involves automatic hedging of exposures in the forward market as soon as they arise, irrespective of the attractiveness or otherwise of the forward rate.
14. Perhaps the worst strategy is to leave all exposures .....
15. The merits of Low Risk: Low Reward approach is that ..... and costs of the transaction are known and there is little risk of cash flow destabilisation.

10.4 Some Illustrations

1. Vogl Company is a U.S. firm conducting a financial plan for the next year. It has no foreign subsidiaries, but more than half of its sales are from exports. Its foreign cash inflows to be received from exporting and cash outflows to be paid for imported supplies over the next year are disclosed below:

Currency	Total Inflow	Total Outflow
Canadian dollars (C$)	C$35,000,000	C$2,500,000
German mark (DM)	DM5,500,000	DM1,600,000
French franc (FF)	FF15,000,000	FF12,000,000
Swiss franc (SF)	SF 6,000,000	SF 8,000,000

The spot rates and one-year forward rates as of today are:

Currency	Spot Rate	One Year Forwad Rate
C$	$ .90	$.95
DM	.62	.59
FF	.16	.14
SF	.65	.69

Based on the information provided, determine the net exposure of each foreign currency in dollar.

Notes

Solution:

Currency	Inflow	Outflow	Net Flow	ER	Exposure ($)
Canadian dollars	35,000,000	2,500,000	32,500,000	0.9	29,250,000
German Mark	5,500,000	1,600,000	3,900,000	0.62	2,418,000
French Franc	15,000,000	12,000,000	3,000,000	0.16	480,000
Swiss Franc	6,000,000	8,000,000	(2,000,000)	0.65	(1,300,000)

2. Jeanette Co. is a U.S.-based MNC that obtains 60 percent of its foreign supplies from Malaysia. It also borrows Malaysia's currency from banks and converts Malaysian dollars to US dollars to support U.S. operations. It currently receives about 18 percent of its revenue from customers. Its sales to Malaysia customers are denominated in M $. Discuss how Jeanette Co. can reduce its economic exposure to exchange rate fluctuations.

Solution:

Malaysian dollar denominated operations of the US-based firm:

1. Purchase of 60% supplies in Malaysian Dollars
2. Borrowing in Malaysian Dollars-Usage after conversion to US$
3. Receipt of revenue to the tune of 18% in Malaysian Dollars

As we can see, the firm faces a large exposure to the Malaysian$/USD exchange rate fluctuations.

Ways of managing Economic exposure due to above fluctuations:

Marketing Initiatives

1. ***Market Selection:*** The firm has 18 % customers in Malaysia. It should try and move up the value chain and income group segments within the Malaysian consumer market. This will make it less susceptible to exchange fluctuations.
2. ***Product Strategy:*** The firm should adopt strategies of product innovation and product line expansion especially during times of home currency appreciation.
3. ***Pricing:*** In case of home currency appreciation, the firm should consider increase in the foreign currency prices of its products, keeping the local competition constraint in mind.
4. ***Promotional Strategy:*** In sync with the devaluation/appreciation the firm may have to increase/decrease its promotional spend.

3. Claire Corp. is a U.S. based MNC that exports large supplies to Japan. The contract will continue for several years and generate more than half of Claire's total sales volume. The Japan government pays Claire Corp in Japanese currency. About 20 percent of Claire's total running expenses are in Japanese currency; all other expenses are in U.S. dollars. Explain the ways by which Claire Co. can reduce its transaction and economic exposure to exchange rate fluctuations.

Solution:

Reducing Transaction Exposure

1. *Claire Corp* faces transaction exposure as it has contractual cash flows in Japanese currency. If Japanese yen appreciates (depreciates) then receipts in dollar will be higher (lower).

Notes

2. Ways to manage Transaction Exposure:
   (a) Financial contracts:
      (i) Forward market hedge: The firm may sell (buy) its foreign currency receivables (payables) forward to eliminate its exchange risk exposure
      (ii) Money market hedge: By lending and borrowing in the domestic and foreign money markets
      (iii) Option market hedge: The firm may buy a foreign currency call (put) option to hedge its foreign currency payables (receivables)
      (iv) Swap market hedge: As the cash flows are recurrent in a foreign currency can be hedged using a currency swap contract, which is an agreement to exchange one currency for another at a predetermined exchange rate, that is, the swap rate, on a sequence of future dates.
   (b) Operational techniques:
      (i) Choice of the invoice currency: The firm can shift, share, or diversify exchange risk by appropriately choosing the currency of invoice
      (ii) Lead/lag Strategy: Leading and lagging foreign currency receipts and payments. To "lead" means to pay or collect early and to "lag" means to pay or collect late.

Reducing Economic Exposure

1. Economic exposure is the sensitivity of the future home currency value of the Marigold's assets and liabilities and the firm's operating cash flow to random changes in exchange rates.
2. Ways to manage Economic Exposure:
   (a) Diversification to other markets
   (b) Shifting sources of cost/revenue to other markets
   (c) Restructuring operations to balance its exchange rate sensitive cash flows

4. Two US-based Companies – Pitunia Co. and RoseMary Flower, Inc., are U.S.-based MNCs with subsidiaries in Europe that distribute Plants and Flowers (produced in the United States) to customers throughout Latin America. Both subsidiaries purchase the products at cost and sell the products at 120 percent mark-up. The other operating costs of the subsidiaries are very low. Pitunia Co. has a growing and designing centre in the United States that focuses on improving its technology. RoseMary Flower, Inc., has a similar centre based in Europe. The parent of each firm subsidizes its respective growing and designing centre on an annual basis. Are the two firms subject to economic exposure? Explain which firm is subject to a higher degree of economic exposure?

   Solution:

   Yes, both firms are subject to economic exposure as the present value of their future cash flows stands to be impacted by exchange rate fluctuations.

   However RoseMary Flower has a relatively higher degree of economic exposure it has great amount of assets sitting in foreign locations. Hence there is a greater chance of fluctuating cash flows for it in future as compared to Pitunia.

5. Funky Colors Company has net receivables of 450,000 Australian dollars in 90 days. The spot rate of the AU$ is $.961, and the Australian interest rate is 2.5 percent over 90 days. How do you think the Australian firm could implement a money market hedge?

Notes

Solution:

The firm could borrow the amount of Australian dollars so that the 450,000 Australian dollars to be received could be used to pay off the loan. This amounts to (450,000/1.025) = about AU $439, 024, which could be converted to about $421, 902 and invested. The borrowing of Australian dollars has offset the transaction exposure due to the future receivables in Australian dollars.

6. A MNC has net payables of 450,000 Mexican pesos in 180 days. The Mexican interest rate is 7.5 percent over 180 days, and the spot rate of the peso is $.096. Suggest how the U.S. firm could implement a money market hedge.

Solution:

The firm could borrow the amount of Mexican pesos so that the 450,000 Mexican pesos to be received could be used to pay off the loan. This amounts to (450,000/1.075) = about $418, 604, which could be converted to about $40, 186 and invested. The borrowing of Mexican pesos has offset the transaction exposure due to the future receivables in Mexican pesos.

Task Review a few annual reports of MNCs. Do you think that some industries are more exposed to economic exposure than others? Based on the economic exposure of the MNC, comment on the methods it uses to hedge its exposure.

Case Study

Economic Exposure: PC Pacific India Ltd.

Introduction

PC Pacific, India's largest listed IT services company, has a strong presence across emerging technologies. Services provided to infrastructure companies in the communications space account for one–third of the global IT services revenue. It is one of the few select companies in India that will follow the wireless and broadband evaluation ground up to the enterprise stage. Unlike other Indian companies, PC Pacific's margins hold considerable uptide in the medium term, given its low billing rates and off-shore component.

PC Pacific has a business model of a balanced business mix of technology and applications and client mix of technology, vendors and enterprises. Its ability to provide system design services to communication equipment manufacturers puts it at the forefront of emerging wireless and broadband revolution.

PC Pacific is operationally based at the Cyber Valley in the USA. It does all its billings in US dollars, as almost all of its major clients are based in the USA or Canada. However, it has a substantial chunk of its sales in Europe and South East Asia as well. Since its headquarters are based in India, it is quite susceptible to exchange rate risk. This case study is intended to illustrate the economic risk that the company faces.

The following is the sales, costs after-tax income and cash for the previous year, for 2001. It is based on the 1st April 2001 exchange rate of $1= ₹ 45.85. The exchange rate expected for the year ended, 31st March 2002 was $1=₹ 47.10.

Contd...

Notes

Domestic Sales	1456	
Export Sales	3231	
Total Revenue		4687
Total Operating Expenditure		2657
Overhead Expenses		1376
Depreciation		286
Net Profit before Tax		368
Other Income		638
Net Taxable Income		1006
Income Tax		334
Profit after Tax		672
Add back Depreciation		286
Net Cash Flow in Dollars		958
Net Cash Flow in Rupees		43943.46

Notes: 1. Exchange rate $1 = ₹ 45.85

2. All Figures in INR Millions

The balance sheet before and after the exchange rate change is shown below:

	USD Million	**INR Million (before devaluation)**	**INR Million (after devaluation)**	
			Current Rate	**Monetary/Non Monetary**
ASSETS				
Cash and cash equivalent	887	40688.95	41777.70	41777.70
Accounts receivable	323	14809.55	15213.30	15213.30
Inventory	153	7015.05	7206.30	7015.05
Net fixed assets	3369	154468.65	158679.90	154468.65
Total assets	4732	216962.20	222877.20	218474.70
LIABILITIES				
Accounts payable	1725	79091.25	81247.50	81247.50
Long-term debt	2315	106142.75	109036.50	109036.50
Equity	392	31728.20	32593.20	281907.00
Total liabilities	4732	216962.20	222877.20	218474.70
Translation gain (Loss)			5915.00	1512.50

Based on the above basic data on PC, Pacific India Limited, analyse the economic exposure that the company faces on the basis of three different scenarios.

Scenario 1: All variables remain the same.

Scenario 2: Sales price and other costs go up but volume remains the same.

Scenario 3: There are partial increases in prices, costs and volume. Assume that the sales price in the domestic market increases by 15% and that in the foreign market by 20%. Assumptions can be made wherever necessary.

Quesions

1. What do you infer from the Case.
2. Discuss the business model of PC Pacific.

Source: *International Financial Management*, Madhu Vij, Excel Books.

Notes

10.5 Summary

- Economic exposure is the risk that a variation in the rate will affect the company's competitive position in the market and hence its profits.
- Economic exposure can be managed by balancing the sensitivity of revenue and expenses to exchange rate fluctuations.
- Transaction exposure differs from economic exposure in that the former is essentially objective while the later is subjective as it depends on estimated future cash flows for an arbitrary time horizon.
- The various techniques for mechanizing economic exposure are leading and lagging, currency swap, credit swap, parallel financing and by diversification of the firm's operating base strategy and financing base strategy.
- Economic exposure can be managed by a combination of marketing and production initiatives. However a lot depends on the corporate philosophy of a company specifically its attitude towards risk.
- Thus, it is necessary to formulate a strategy to deal with economic exposure as without a clearly defined strategy it may become difficult to make the right decisions.

10.6 Keywords

Call Option: Call option gives the buyer the right, but not the duty, to purchase an underlying asset, reference rate or index at a particular price before a specified date.

Currency Future: Currency future is the price of a particular currency for settlement at a specified future date.

Currency Swap: It is referred to a simple swap of currencies between two firms in two countries. A currency swap stays off the books because it does not involve interest, gains, or losses.

Interest Rate Swap: An interest rate swap is a contractual agreement entered into between two counterparties under which each agrees to make periodic payment to the other for an agreed period of time based upon a national amount of principal.

Leading and Lagging: It is a technique that manipulates accounts receivable and accounts payable to take advantage of exchange rate fluctuations.

Money Market Hedge: Money market hedge involves simultaneous borrowing and lending activities in two different currencies to lock in the home currency value of a future foreign currency cash flow.

Netting: Netting is a technique of optimizing cash flow movements with the joint efforts of subsidiaries.

Put Option: Put option gives the buyer the ability, but not the obligation, to sell an underlying asset, reference rate, or index at a particular price to a specified date.

10.7 Review Questions

1. How does inflation affect a country's currency value? Is it a good idea to borrow or obtain financing in a country with high inflation?
2. What are leading and lagging and how should they be employed with regard to payment and collection?

Notes

3. How should a MNC reduce its foreign exchange risks?
4. Briefly discuss the rules regarding accounting for foreign exchange in India.
5. What is economic exposure? How do you measure it?
6. How can you manage economic exposure? Give the marketing and production initiatives of managing economic exposure.
7. Discuss the determinants of economic exposure.
8. Compare the three types of exposure: translation, transaction and economic.
9. Differentiate between transaction and economic exposure.

Answers: Self Assessment

1. Netting
2. Fluctuations
3. Future
4. Interest
5. Currencies
6. Expectations
7. Promotional
8. Product
9. Employee
10. Production
11. Active
12. Accuracy
13. Low Risk: Low Reward
14. Unhedged
15. Yields

10.8 Further Readings

Books

Apte, P.G. *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi.

Shapiro Allan C, *Multinational Financial Management*, Prentice Hall, New Delhi.

Bhalla, V.K. *International Financial Management*, Anmol Publishers.

Eun/Resnick, *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi.

Online links

http://athene.mit.csu.edu.au/~hskoko/subjects/fin340/lect05.pdf

http://club.ntu.edu.tw/~ntuib/contents/course/irg-answer/ch11.pdf

http://finance.wharton.upenn.edu/~bodnarg/courses/nbae/IFM/Chapter9.pdf

http://www.cob.unt.edu/firel/TRIPATHY/f5500/Lecture%20Notes/Eun%20and%20Resnick/f55%20ER%20Ch09%20Economic%20Exposure.pdf

Unit 11: Management of Translation Exposure

Notes

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Objectives

After studying this unit, you will be able to:

- Explain the translation methods
- Discuss the functional and reporting currency
- Discuss the comparison between the four translation methods

Introduction

Accounting exposure, also known as translation exposure, arises because MNCs may wish to translate financial statements of foreign affiliates into their home currency in order to prepare consolidated financial statements or to compare financial results. As investors all over the world are interested in home currency values, the foreign currency balance sheet and income statement are restated in the parent country's reporting currency. For example, foreign affiliates of US companies must restate the franc, sterling or mark statements into US dollars so that the foreign values can be added to the parent US dollar denominated balance sheet and income statement. This accounting process is called 'translation.'

Translation exposure (also known as accounting exposure) measures the effect of an exchange rate change on published financial statements of a firm. Assets and liabilities that are translated at the current exchange rate are considered to be exposed as the balance sheet will be affected by fluctuations in currency values over time; those translated at a historical exchange rate will be regarded as not exposed as they will not be affected by exchange rate fluctuations. So, the difference between exposed assets and exposed liabilities is called translation exposure.

Translation Exposure = Exposed assets – Exposed liabilities

Notes

Under the generally accepted US accounting principles, the net monetary asset position of a subsidiary is used to measure its parent's foreign exchange exposure. The net monetary asset position is monetary assets such as cash and accounts receivable minus monetary liabilities such as accounts payable and long-term debt. Let us understand this with the help of the following example.

A US parent company has a single wholly-owned subsidiary in France. This subsidiary has monetary assets of 200 million francs and monetary liabilities of 100 million francs. The exchange rate declines from FFr 4 per dollar to FFr 5 per dollar.

The potential foreign exchange loss on the company's exposed net monetary assets of 100 million francs would be $5 million

Monetary assets		FFr 200 million
Monetary liabilities		FFr 100 million
Net exposure		FFr 100 million
Pre-devaluation rate (FFr 4=$1) FFr 100 million	=	$25.0 million
Post-devaluation rate (FFr 5 – $1) FF100 million	=	$20.0 million
Potential exchange loss		$.5.0 million

The translation of gains and losses does not involve actual cash flows—these gains or losses are purely on paper, i.e., they are of an accounting nature.

11.1 Translation Methods

Four methods of foreign currency translation have been developed in various countries.

1. Current rate method of FAS No. 52 (1982 present)
2. Monetary/non-monetary method
3. Temporal method
4. Current/non-current method

The first two methods are allowed by the US accounting standard.

11.1.1 Current Rate Method

The current rate method is the simplest and the most popular method all over the world. This method was adopted in 1981. According to FASB 52 firms must use the current rate method to translate foreign currency denominated assets and liabilities. Under this method, all balance sheet and income items are translated at the current rate of exchange, except for stockholders' equity which is translated at historical rate. Income statement items, including depreciation and cost of goods sold, are translated at either the actual exchange rate on the dates the various revenues and expenses were incurred or at the weighted average exchange rate for the period. Dividends paid are translated at the exchange rate prevailing on the date the payment was made. The common stock account and paid-in-capital accounts are translated at historical rates. Further, gains or losses caused by translation adjustment are not included in the net income but are reported separately and accumulated in a separate equity account known as Cumulative Translation Adjustment (CTA). Thus CTA account helps in balancing the balance sheet balance, since translation gains or losses are not adjusted through the income statement.

Notes

The two main advantages of the current rate method are, first, the relative proportions of the individual balance sheet accounts remain the same and hence do not distort the various balance sheet ratios like the debt-equity ratio, current ratio, etc. Second, the variability in reported earnings due to foreign exchange gains or losses is eliminated as the translation gain/loss is shown in a separate account – the CTA account.

Did u know? The main drawback of the current rate method is that various items in the balance sheet which are recorded at historical costs are translated back into dollars at a different rate.

11.1.2 The Monetary/Non-monetary Method

The monetary/non-monetary method differentiates between monetary and non-monetary items. Monetary items are those that represent a claim to receive or an obligation to pay a fixed amount of foreign currency unit, e.g., cash, accounts receivable, current liabilities, accounts payable and long-term debt.

Non-monetary items are those items that do not represent a claim to receive or an obligation to pay a fixed amount of foreign currency items, e.g., inventory, fixed assets, long-term investments. According to this method, all monetary items are translated at the current rate while non-monetary items are translated at historical rates.

Income statement items are translated at the average exchange rate for the period, except for items such as depreciation and cost of goods sold that are directly associated with non-monetary assets or liabilities. These accounts are translated at their historical rates.

11.1.3 Temporal Method

This method is a modified version of the monetary/non-monetary method. The only difference is that under the temporal method inventory is usually translated at the historical rate but it can be translated at the current rate if the inventory is shown in the balance sheet at market values. In the monetary/non-monetary method inventory is always translated at the historical rate.

Caution Under the temporal method, income statement items are normally translated at an average exchange rate for the period. However, cost of goods sold and depreciation are translated at historical rates.

11.1.4 Current/Non-current Method

The current/non-current method is perhaps the oldest approach. No longer allowable under generally accepted accounting practices in the United States, it was nevertheless widely used prior to the adoption of FAS #8 in 1975. Its popularity gradually waned as other methods were found to give more meaningful results. Under the current/non-current method, all current assets and current liabilities of foreign affiliates are translated into the home currency at the current exchange rate while non-current assets and non-current liabilities are translated at historical rates.

In the balance sheet, exposure to gains or losses from fluctuating currency values is determined by the net of current assets less current liabilities. Gains or losses on long-term assets and liabilities are not shown currently. Items in the income statement are generally translated at the average exchange rate for the period covered. However, those items that relate to revenue or

Notes

expense items associated with non-current assets (such as depreciation changes) or long-term liabilities (amortisation of debt discount) are translated at the same rate as the corresponding balance sheet items.

Self Assessment

Fill in the blanks:

1. CTA account helps in balancing the balance sheet balance, since translation gains or losses are not adjusted through the ..... statement.
2. According to ..... firms must use the current rate method to translate foreign currency denominated assets and liabilities.
3. FASB Statement No. ..... provided that cash, receivables and payables were translated at current exchange rates while fixed assets and liabilities were translated at historical rates.
4. The basic outcome of FASB 52 was that if a foreign entity's books are not kept in the ..... currency, then the books must be re-measured into the functional currency prior to translation.
5. Unrealized foreign currency gains or losses, except from re-measurement, are separately stated as a component of ..... equity.

11.2 Functional vs Reporting Currency

Financial Accounting Standards Board Statement 52 (FASB 52) was issued in December 1981, and all US MNCs were required to adopt the statement for fiscal years beginning on or after December 15, 1982. According to FASB 52, firms must use the current rate method to translate foreign currency denominated assets and liabilities into dollars. All foreign currency revenue and expense items on the income statement must be translated at either the exchange rate in effect on the date these items were recognised or at an appropriate weighted average exchange rate for the period. The other important part about FASB 52 is that it requires translation gains and losses to be accumulated and shown in a separate equity account on the parent's balance sheet. This account is known as the 'cumulative translation adjustment' account.

FASB 52 differentiates between a foreign affiliate's "functional" and "reporting" currency.

Functional currency is defined as the currency of the primary economic environment in which the affiliate operates and in which it generates cash flows. Generally, this is the local currency of the country in which the entity conducts most of its business. Under certain circumstances the functional currency may be the parent firm's home country currency or some third country currency.

The reporting currency is the currency in which the parent firm prepares its own financial statements. This currency is normally the home country currency, i.e., the currency of the country in which the parent is located and conducts most of its business.

The nature and purpose of its foreign operations must be determined by the management to decide on the appropriate functional currency. Some of the economic factors that help in selecting the appropriate functional currency are listed in Table 11.1.

In general, if the foreign affiliate's operations are relatively self-contained and integrated with a particular country, its functional currency will be the local currency of that country. Thus, for example, the German affiliates of Ford and General Motors, which do most of their manufacturing in Germany and sell most of their output for Deutschmarks, use the Deutschmark as their

functional currency. If the foreign affiliate's operations were an extension of the US parent's operations, the functional currency could be the US dollar.

Table 11.1: Economic Factors that Help in Selecting the Appropriate Functional Currency

Foreign Unit's	Local Currency Indicators	Dollar Indicators
Cash Flows	Primarily in the local currency; do not directly affect parent company cash flows	Direct impact on parent company; cash flow available for remittance
Sales Prices	Not responsive to exchange rate changes in the short run; determined more by local conditions	Determined more by world-wide competition; affected in the short run by exchange rate changes
Sales Market	Active local market for entity's products	Products sold primarily in the United States; sales contracts denominated in dollars
Expenses	Labour, materials, and other costs denominated primarily in local currency	Inputs primarily from sources in the United States or otherwise denominated in dollars
Financing	Primarily in local currency; operations generate sufficient funds to service these debts	Primarily from the parent company or otherwise denominated in dollars; operations don't generate sufficient dollars to service its dollar debts
Intercompany Transactions	Few intracorporate transactions; little connection between local and parent operations	High volume of intracorporate transactions; extensive inter-relationship between local and parent operations

If the foreign affiliate's functional currency is deemed to be the parent's currency, translation of the affiliate's statements employs the temporal method of FAS 8. Thus, many US multinationals continue to use the temporal method for those foreign affiliates that use the dollar as their functional currency, while using the current rate method for their other affiliates. Under Fas 52, if the temporal method is used, translation gains or losses flow through the income statement as they did under FAS 8; they are not charged to the CTA account.

Notes Accounting exposure is the potential for translation losses or gains. Translation is the measurement, in a reporting currency, of assets, liabilities, revenues, and expenses of a foreign operation where the foreign accounts are originally denominated and/or measured in a functional currency that is also a foreign currency. Accounting exposure is, thus, the possibility that a change in exchange rates will cause a translation loss or gain when the foreign financial statements are restated in the parent's own reporting currency.

Self Assessment

Fill in the blanks:

6. If the …… affiliate's functional currency is deemed to be the parent's currency, translation of the affiliate's statements employs the temporal method of FAS 8.
7. According to FASB 52, firms must use the …… method to translate foreign currency denominated assets and liabilities into dollars.
8. The …… currency is the currency in which the parent firm prepares its own financial statements.

Notes

9. ..... exposure is the potential for translation losses or gains.

10. ..... currency is defined as the currency of the primary economic environment in which the affiliate operates and in which it generates cash flows.

11. ..... is the measurement, in a reporting currency, of assets, liabilities, revenues, and expenses of a foreign operation where the foreign accounts are originally denominated and/or measured in a functional currency that is also a foreign currency.

11.3 Comparison of Four Translational Methods

A comparison of the four translation methods is presented below:

1. ***Monetary/Non-monetary Method***

   - All monetary balance sheet accounts (cash, marketable securities, accounts receivable, etc.) of a foreign subsidiary are translated at the current exchange rate.
   - All other (non-monetary) balance sheet accounts (owners' equity, land) are translated at the historical exchange rate in effect when the account was first recorded.

2. ***Current-Non Current Method***

   - All current assets and current liabilities of foreign affiliates are translated into the parent currency at current exchange rates.
   - All noncurrent assets, noncurrent liabilities, and owner's equity are translated at historical exchange rates.
   - Most income statement items are related to current assets or liabilities and are translated at the average exchange rate over the reporting period.
   - Depreciation is related to noncurrent assets and translated at the historical exchange rate.

3. ***Temporal Method of FAS No 8***

   - Monetary assets and monetary liabilities are translated at current exchange rates.
   - Monetary assets include cash, accounts receivables, and notes receivable. In general, all liabilities are monetary.
   - Non monetary assets, non monetary liabilities, and owner's equity are translated at historical rates.
   - Non monetary assets include inventory and fixed assets.
   - Most Income statements items related to current items are translated at average ER.
   - Depreciation and cost of goods sold are related to real assets (Non monetary) and are translated at historical ER.

4. ***The Current Rate Method of FAS no 52***

   - All assets and liabilities except common equity are translated at the current exchange rate.
   - Common equity is translated at historical exchange rates.
   - Income statement items are translated at a current exchange rate.
   - Any imbalance between the book value of assets and liabilities is recorded as a separate equity account called the Cumulative Translation Adjustment (CTA).

Notes

All financial statement items restated in terms of the parent currency are the functional currency amount multiplied by the appropriate exchange rate. Table 11.2 compares the four translation methods in terms of the exchange rate for each balance sheet item: current/non-current, monetary/non-monetary, temporal and current rate.

Table 11.2: Exchange Rates Used to Translate Balance Sheet Items

Balance Sheet	Current/Non-current	Monetary/Non-monetary	Temporal	Current Rate
Cash	C	C	C	C
Receivables	C	C	C	C
Payables	C	C	C	C
Inventory	C	C	C or H	C
Fixed Assets	H	H	H	C
Long-term Debt	H	C	C	C
Net Worth	H	H	H	H

Example: Assume that a foreign subsidiary of a US multinational company has the following:

(i) Cash = FC100 (ii) Account receivable = FC150 (iii) Inventory = FC200 (iv) Fixed assets = FC250 (v) Current liabilities = FC100 (vi) Long-term debt = FC300 and (vii) Net worth = FC300. Let us further assume that the historical exchange rate is $2 = FC1, the current exchange rate is $1 = FC1 and inventory is carried at market prices.

Table 11.3 illustrates the effect of each translation method on the balance sheet. Exchange gains or losses are shown here as a separate balancing account to show how they would be derived. However, in actual practice, sometimes net worth is used as a balancing figure.

Under the current/non-current method, an exchange loss of $350 is recorded because current assets are greater than current liabilities. On the other hand, under the monetary/non-monetary method, an exchange gain of $150 is recorded because monetary liabilities exceed monetary assets.

Table 11.3: Comparison of Four Translation Methods

Accounts	Functional Currency	Current/Non-current		Monetary/Non-monetary		Temporal		Current Rate	
Cash	FC 100	$100	(1)	$100	(1)	$100	(1)	$100	(1)
Accounts Receivable	150	150	(1)	150	(1)	150	(1)	150	(1)
Inventory	200	200	(1)	400	(2)	200	(1)	200	(1)
Fixed Assets	250	500	(2)	500	(2)	500	(2)	250	(1)
Total	FC700	$950		$1150		$950		$700	
Current Liabilities	FC100	$100	(1)	$100	(1)	$100	(1)	$100	(1)
Long-term Debt	300	600	(2)	300	(1)	300	(1)	300	(1)
Net Worth	300	600	(2)	600	(2)	600	(2)	600	(2)
Gains (Losses)	–	(350)	150	(50)	(300)				
Total	FC 700	$950		$1150		$950		$700	

Notes

The figures in brackets show the exchange rate used to translate the respective items in the balance sheet.

Under the current rate method, the exchange loss is $300 because all accounts except net worth are translated at the current exchange rate.

Problem 1:

Farm Products is the Canadian affiliate of a US manufacturing company. Its balance sheet, in thousands of Canadian dollars, for January 1, 1991 is shown below. The January 1, 1991, exchange rate was C$1.6/$.

Farm Products Balance Sheet

(Thousands of C$)

Assets		Liabilities and Net Worth	
Cash	C$1,00,000	Current Liabilities	C$ 60,000
Accounts receivable	2,20,000	Long-term debt	1,60,000
Inventory	3,20,000	Capital Stock	6,20,000
Net plant and equipment	2,00,000		
Total	C$8,40,000		C$8,40,000

(a) Determine Farm Products accounting exposure on January 1, 1992, using the current rate method/monetary/non-monetary method.

(b) Calculate Farm Products contribution to its parent's accounting loss if the exchange rate on December 31, 1991 was C$1.8 per $. Assume all accounts remain as they were at the beginning of the year.

Solution:

Current Rate Method

Assets	C$	Exchange Rate	Conversion to US $ on Jan. 1, 1992
Cash	1,00,000	1.8	55,555.55
Accounts Receivable	2,20,000	1.8	1,22,222.22
Inventory	3,20,000	1.8	1,77,777.77
P&E	2,00,000	1.8	1,11,111.11
	8,40,000		4,66,666.66
Liabilities			
Current Liabilities	60,000	1.8	33,333.33
Long-term debt	1,60,000	1.8	88,888.88
Capital Stock	6,20,000	1.6	3,87,500.00
CTA	–		(43,055.55)
	8,40,000		4,66,666.66

As per current rate method

(a) A/c exposure on Jan 1, 1992 is as follows:

Exposed Assets = US $ 4,66,666.66

Exposed Liabilities = US $ 1,22,222.21

Accounting Exposure = 344444.45

Accounting Loss as shown in CTA account is US $ 43,055.55

Notes

(b) If we use the monetary/non-monetary method

A/c exposure on Jan 1, 1992 is as follows:

Exposed Assets = US $ 1,77,777.77

Exposed Liabilities = US $ 1,22,222.21

Accounting Exposure = 55555.57

Accounting Loss as shown in CTA account is US $ 6,944.44 as per monetary/non-monetary method.

	C$	Exchange Rate	Conversion to US $ on Jan 1, 1992
Cash	1,00,000	1.8	55,555.55
Accounts Receivable	2,20,000	1.8	1,22,222.22
Inventory	3,20,000	1.6	2,00,000.00
P & E	2,00,000	1.6	1,25,000.00
	8,40,000		5,02,777.77
Current Liabilities	60,000	1.8	33,333.33
Long-term debt	1,60,000	1.8	88,888.88
Capital Stock	6,20,000	1.6	38,7500.00
CTA	–		(6,944.44)
	8,40,000		5,02,777.77

Problem 2:

AV Ltd., is the Indian affiliate of a US sports manufacturer. AV Ltd manufactures items which are sold primarily in the United States and Europe. AV's balance sheet in thousands of rupees as of March 31st is as follows:

Assets		Liabilities and Net Worth	
Cash	₹ 6,000	Accounts payable	₹ 3,500
Accounts receivable	4,500	Short-term bank loan	1,500
Inventory	4,500	Long-term loan	4,000
Net plant and equipment	10,000	Capital stock	10,000
		Retained earnings	6,000
Total	₹ 25,000		₹ 25,000

Exchange rates for translating the balance sheet into US dollars are:

₹35/$: Historic exchange rate, at which plant and equipment, long-term loan and common stock were acquired or issued.

₹40/$: March 31st exchange rate. This was also the rate at which inventory was acquired.

₹42/$: April 1st exchange rate, after devaluation of 20%.

Assuming no change in balance sheet accounts between March 31st and April 1st, calculate accounting gain or loss by the current rate method and by monetary/non-monetary method. Explain accounting loss in terms of changes in the value of exposed accounts.

Notes

Solution:

Exchange Rates

- ₹ 35/$ for P&E, long-term loan, common stock
- ₹ 40/$ for inventory March 31st
- ₹ 42/$ for April 1st

On using the current rate method

	₹	Exchange Rate	Conversion to US $ on Nov 31st	Exchange rate	Conversion to US $ on April 1st
Cash	6000	40	$150	42	$142.86
Accounts receivable	4500	40	112.50	42	107.14
Inventory	4500	40	112.50	42	107.14
P&E	10000	40	$250.00	42	238.10
Total	25,000		625.00		$595.24
Accounts payable	3500	40	$87.50	42	$83.33
Short-term Loan	1500	40	37.50	42	35.71
Long-term Loan	4000	40	100.00	42	95.24
Capital Stock	10,000	35	285.71	42	285.71
Retained earnings	6,000	35	171.43	35	171.043
CTA	–		(57.14)		(76.19)
Total	25,000		$625.00		$595.24

A/c loss by current rate method is * $ 57.14 on March 31st

* $ 76.19 on April 1st

	March 31st	April 1st
Exposed assets	$ 625.00	$595.24
Exposed liabilities	$ 225.00	$499.99
Net exposed	$400.00	$95.25

On using monetary/non-monetary method

	₹	Exchange Rate	Conversion to US $ on May 31st	Exchange	Conversion to US $ on April 1st
Cash	6000	40	$150.00	42	$142.86
Accounts receivable	4500	40	112.50	42	107.15
Inventory	4500	35	128.57	35	128.57
P&E	10,000	35	285.71	35	285.71
Total	₹ 25,000		$676.78		664.29
Accounts payable	3500	40	87.50	42	83.33
Short-term Loan	1500	40	37.50	42	35.721
Long-term Loan	4000	40	100.00	42	95.24
Capital Stock	10,000	35	285.71	35	285.71
Retained earning	6,000	35	171.43	35	171.43
CTA	–		(5.36)		(7.13)
Total	₹ 25,000		$ 676.78		$ 664.29

Notes

Account loss by monetary/non-monetary method is ($ 5.36) on March 31st

($7.13) on April 1st

	March 31st	April 1st
Exposed assets	$262.50	$250.00
Exposed liabilities	$225.00	$214.28
Net exposed	($37.5)	($35.72)

Problem 3:

ABC House Ltd manufactures orange marmalade in England. It is the wholly owned subsidiary of XYZ Inc. of USA. The functional currency for ABC is the pound sterling which currently sells at $1.5000/£. The reporting currency for XYZ is the U S dollar. Non-consolidated financial statements for both ABC and XYZ are as follows (in thousands):

Assets	XYZ Inc.	ABC Ltd
Cash	$8,000	£ 2,000
Accounts receivable	10,000	4,000
Inventory	8,000	2,000
Net plant and equipment	10,000	6,000
Investment	4,500	
Total	$40,500	£ 14,000

Liabilities and Net Worth

Current liabilities	$ 22,000	£ 4,000
5-year term loan		4,000
Capital stock	9,000	2,000
Retained earnings	9,500	4,000
Total	$ 40,500	£ 14,000

(a) Prepare a consolidated balance sheet for XYZ Ltd.

(b) What is ABC Ltd's accounting exposure in dollars? Use the current rate method of calculation.

(c) Before any business activities take place, the pound sterling depreciates 9% in value relative to the dollar. What is the new spot rate?

(d) What is XYZ accounting loss or gain, if any, by the current rate method/monetary/non-monetary method?

Solution:

Balance sheet for ABC Ltd in dollars:

Assets		Rate	$	Liabilities		Rate	$
Cash	£2,000	1.50	3,000	Current liabilities	£4,000	1.5	6,000
Accounts receivable	4,000	1.50	6,000	5-year term loan	4,000	1.5	6,000
Inventory	2,000	1.50	3,000	Capital Stock	2,000	1.5	3,000
Plant & equipment	6,000	1.50	9,000	Retained earnings	4,000	1.5	6,000
	£14,000		$21,000		£14,000		$21,000

Notes

(a) Consolidated balance sheet for XYZ & its subsidiary ABC Ltd.

Assets	Amount
Cash	$11,000
Accounts receivable	$16,000
Inventory	$11,000
Net plant & equipment	$19,000
Investment	$4,500
Total	$61,500

Liabilities & Net Worth	Amount
Current liabilities	$28,000
Five-year term loan	$ 6,000
Capital stock	$12,000
Retained earnings	$15,500
Total	$61,500

(b) Using the current rate method

Assets	Amount
Cash	$ 3,000
Accounts receivable	$ 6,000
Inventory	$ 3,000
Net plant & equipment	$ 9,000
Total	$ 21,000

Liabilities & Net Worth	Amount
Current liabilities	6,000
Five-year term loan	$ 6,000
Accounting Exposure	$ 9,000
Total	$ 21,000

(c) If currency depreciates by 9%, the current spot rate is $1.365/£.

(d) New position of the firm after depreciation

Assets	Current Rate Method	M/N.M. Amount
Cash	$2,730	$2,730
Accounts receivable	$5,460	$5,460
Inventory	$2,730	$3,000
Net plant & equipment	$8,190	$9,000
Total	$19,110	$20,190

Notes

Liabilities & Net Worth		
Current liabilities	$ 5,460	$ 5,460
Five-year term loan	$ 5,460	$ 5,460
Capital stock	$ 3,000	$ 3,000
Retained earnings	$ 6,000	$ 6,000
CTA	(810)	270
Total	$ 19,110	$ 20,190

Therefore, loss, by current method = $810.0

And gain, by monetary/N. M. method = $270.0

Caselet

HLL Ltd. Translation Exposure

Hindustan Level Ltd has foreign subsidiaries that facilitate its international business. Its consolidated earnings are partially attributed to the earnings generated by its foreign subsidiaries. The consolidated statements of HLL Ltd are subject to translation exposure, as all foreign earnings (in different currencies) are translated into US dollar earnings. Hence the consolidated earnings of the company are affected by the exchange rates prevailing when the conversion takes place. In the second and third quarter of 1988, translated earnings of countries, such as Thailand, Malaysia and Indonesia were reduced substantially, simply because of the depreciation of Asian currencies against the dollar.

Source: *International Financial Management*, Madhu Vij, Excel Books.

Task Collect the annual reports of a few MNCs of your choice. Calculate the translation exposure by the 'monetary/non-monetary method' and 'All current method' and comment on the difference in your result. Does it appear that the MNC hedges its translation exposure? What are the methods it uses to hedge its exposure?

Self Assessment

Fill in the blanks:

12. Under Monetary/Non-monetary Method all monetary balance sheet accounts (cash, marketable securities, accounts receivable, etc.) of a foreign …… are translated at the current exchange rate.
13. Under Current-Non Current Method …… is related to non current assets and translated at the historical exchange rate.
14. Under …… Method of FAS No 8 depreciation and cost of goods sold are related to real assets (Non monetary) and are translated at historical ER.
15. Under the Current Rate Method of FAS no 52 income statement items are translated at a …… exchange rate.

Notes

Case Study

Translation Method

The Balance Sheet of a manufacturer based in Canada, at the current exchange rate of C$1.60/$ is shown as follows.

	Value in C$	Value at C$1.50/$
Assets		
Cash & marketable securities	C$300,000	$200,000
Accounts receivable	C$150,000	$100,000
Inventory	C$600,000	$400,000
Plant & equipment	C$450,000	$300,000
Total liabilities & Net Worth	C$1,500,000	$1,000,000
Liabilities		
Accounts payable	C$300,000	$200,000
Wages payable	C$150,000	$100,000
Net worth	C$1,050,000	$700,000
Total liabilities & Net Worth	C$1,500,000	$1,000,000

Answer each of the following questions under the current/noncurrent rate method, the temporal method of FAS #8, and the current rate method of FAS #52. (Use current exchange rates for inventory in the temporal method.)

- Identify the exposed assets, exposed liabilities, and net exposed assets under the current/non current rate method, the temporal method, and the all current rate method. (Use historical exchange rates for inventory in the temporal method.)
- Identify the impact of a depreciation of the U.S. dollar from C$1.50/$ to C$1.40/$ on the consolidated balance sheets under each accounting translation method.

Source: *International Financial Management*, Madhu Vij, Excel Books.

11.4 Summary

- The foreign exchange business is, by its nature risky because it deals primarily in risk – measuring it, pricing it, accepting it when appropriate and managing it.
- The success of a bank or other institution trading in the foreign exchange market depends critically on how well it assesses, prices, and manage risk, and on its ability to limit losses from particular transactions and to keep its overall exposure controlled.
- Translation exposure measures the effect of exchange rate changes on published financial statements of a firm and these gains or losses are purely on paper.
- They do not involve actual cash flows.
- There are four methods of translation exposure – the current rate method, the monetary/non-monetary method, the temporal method and the current/non-current method. The first two methods are more popular and dare generally used by corporations.

Notes

11.5 Keywords

Current Rate Method: Under this method, all balance sheet and income items are translated at the current rate of exchange, except for stockholders' equity which is translated at historical rate.

FASB Statement No. 8: FASB Statement No. 8 provided that cash, receivables and payables were translated at current exchange rates while fixed assets and liabilities were translated at historical rates.

Forwards: A forward contract is one where counterparty agrees to exchange a specified currency at an agreed price for delivery on a fixed maturity date.

Functional Currency: Functional currency is defined as the currency of the primary economic environment in which the affiliate operates and in which it generates cash flows.

Monetary Items: Monetary items are those that represent a claim to receive or an obligation to pay a fixed amount of foreign currency unit, e.g., cash, accounts receivable, current liabilities, accounts payable and long-term debt.

Non-monetary Items: Non-monetary items are those items that do not represent a claim to receive or an obligation to pay a fixed amount of foreign currency items, e.g., inventory, fixed assets, long-term investments.

Reporting Currency: Reporting currency is the currency in which the parent firm prepares its own financial statements.

Translation Exposure: Translation exposure (also known as accounting exposure) measures the effect of an exchange rate change on published financial statements of a firm.

11.6 Review Questions

1. Briefly explain the four methods of translation exposure.
2. Write a note on the important features of FASB Rule 52.
3. Explain the difference in the translation process between the monetary/non-monetary method and the current method.
4. Briefly explain the difference between 'functional currency' and 'reporting currency'.
5. Identify the factors that help in selecting an appropriate functional currency that can be used by an organisation.
6. What are the foreign currency translation methods used in other major developed countries? Give three examples to illustrate your answer.
7. How are assets and liabilities translated under the current rate method?
8. What is accounting exposure?
9. How are assets and liabilities translated under the current rate method? Also, give the advantages and disadvantages of this method.
10. Distinguish between functional and reporting currency.
11. Barrings Co. is a U.S. firm which annual export sales to Switzerland worth about $5400 million in Switzerland dollars (S$). Its main competitor is Nestle Co., also based in the United States, with a subsidiary in Switzerland that generates about $2500 million in annual sales. All earnings generated by the subsidiary are reinvested to support its operations. Explain which of the two firms is subject to a higher degree of translation exposure?

Notes

Answers: Self Assessment

1.	income	2.	FASB 52
3.	8	4.	Functional
5.	owner's	6.	foreign
7.	current rate	8.	reporting
9.	Accounting	10.	Functional
11.	Translation	12.	subsidiary
13.	depreciation	14.	Temporal
15.	current		

11.7 Further Readings

Books

Apte, P.G. *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi

Bhalla, V.K. *International Financial Management*, Anmol Publishers.

Eun/Resnick, *International Financial Management*, Tata McGraw Hill Publishing Company Limited, New Delhi.

Shapiro Allan C, *Multinational Financial Management*, Prentice Hall, New Delhi.

Online links

http://classes.uleth.ca/200303/mgt3460a/Lectures/Ch14answers.pdf

http://finance.wharton.upenn.edu/~bodnarg/courses/nbae/IFM/Chapter10.pdf

http://wenku.baidu.com/view/0541635f804d2b160b4ec06f.html

http://www.ba.metu.edu.tr/~engin/BA4817/ba4817C10.pdf

Notes

Unit 12: Foreign Market Entry and Country Risk Management

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Objectives

After studying this unit, you will be able to:

- Explain the foreign market entry strategies
- Discuss the concept of country risk
- Elaborate the objectives of country risk ratings
- Describe the techniques to access country risk
- Discuss the raters of country risk
- Explain the Model for country Risk Analysis for India

Introduction

In recent years, a number of countries have made attempts to rate the creditworthiness of corporate borrowers. Relative to domestic lending, international banks experience greater difficulty in assessing the creditworthiness of sovereign borrowers and experience default on loans for various reasons. Recently, several commercial services have begun to compile and publish credit rating for countries, so as to estimate the risks involved in lending to them, specially a country defaulting in its debt service payment obligations. The concepts of country risk and creditworthiness have become important over the years and despite analytical difficulties there has been a growth in interest in recent years among private and official lending institutions in the systematic valuation of country risk. The interest has been generated mainly because credit rating not only determines whether a country will be able to get loans at reasonable costs but also whether it will be able to attract other types of capital.

Notes

Over the past few years, several surveys have been conducted on country risk evaluation system and they have shown that the models employed as multipurpose tools in loan portfolio decision making are as follows: to anticipate country default; set country exposure limits; improve the quality of loan portfolios; impose country-by-country loan ceiling.

Countries which experience greater difficulty in debt management usually face a combination of the following problems: heavy dependence on external borrowings, deterioration in the balance of payments, relatively high rates of inflation, political instability, etc. Thus, implementing policies that address the concern of potential creditors is the strategy that the countries should adopt to rebuild their creditworthiness.

12.1 Foreign Market Entry

When a company makes the commitment to go international, it must choose an entry strategy. This decision should reflect an analysis of market potential, company capabilities, and the degree of marketing involvement and commitment management is prepared to make. A company's approach to foreign marketing can require minimal investment and be limited to infrequent exporting with little thought given to market development. Or a company can make large investments of capital and management effort to capture and maintain a permanent, specific share of world markets. Both approaches can be profitable.

Exporting

A company might decide to enter the international arena by exporting from the home country. This means of foreign market development is the easiest and most common approach employed by companies taking their first international step because the risks of financial loss can be minimised. Exporting is a common approach for the mature international company as well. Several companies engage in exporting as their major market entry method. Generally, early motives are to skim the cream from the market or gain business to absorb overheads. Even though such motives might appear opportunistic, exporting is a sound and permanent form of operating in international marketing.

Piggybacking

Piggybacking occurs when a company (supplier) sells its product abroad using another company's (carrier) distribution facilities. This is quite common in industrial products, but all types of product are sold using this method. Normally, piggybacking is used when the companies involved have complementary but non-competitive products.

Licensing

A means of establishing a foothold in foreign markets without large capital outlays is licensing. Patent rights, trademark rights and the rights to use technological processes are granted in foreign licensing. It is a favourite strategy for small and medium-sized companies although by no means limited to such companies. Not many confine their foreign operations to licensing alone; it is generally viewed as a supplement to exporting or manufacturing, rather than the only means of entry into foreign markets. The advantages of licensing are most apparent when capital is scarce, when import restrictions forbid other means of entry, when a country is sensitive to foreign ownership, or when it is necessary to protect patents and trademarks against cancellation for non-use. Although this may be the least profitable way of entering a market, the risks and headaches are less than for direct investments; it is a legitimate means of capitalising on intellectual property in a foreign market.

Notes

Caution Licensing takes several forms. Licences may be granted for production processes, for the use of a trade name or for the distribution of imported products. Licences may be closely controlled or be autonomous, and they permit expansion without great capital or personnel commitment if licensees have the requisite capabilities. Not all licensing experiences are successful because of the burden of finding, supervising and inspiring licensees.

Franchising

Franchising is a rapidly growing form of licensing in which the franchiser provides a standard package of products, systems and management services, and the franchisee provides market knowledge, capital and personal involvement in management. The combination of skills permits flexibility in dealing with local market conditions and yet provides the parent firm with a reasonable degree of control. The franchiser can follow through on marketing of the products to the point of final sale. It is an important form of vertical market integration. Potentially, the franchise system provides an effective blending of skill centralisation and operational decentralisation, and has become an increasingly important form of international marketing. In some cases, franchising is having a profound effect on traditional businesses. In England, for example, it is estimated that annual franchised sales of fast foods is nearly 1.8 billion ($2 billion), which accounts for 30 per cent of all foods eaten outside the home.

There are three types of franchise agreement used by franchising firms – master franchise, joint venture and licensing – any one of which can have a country's government as one partner. The master franchise is the most inclusive agreement and the method used in more than half of the international franchises. The master franchise gives the franchisee the rights to a specific area (many are for an entire country) with the authority to sell or establish sub-franchises. The McDonald's franchise in Moscow is a master agreement owned by a Canadian firm and its partner, the Moscow City Council Department of Food Services.

Joint Ventures

Joint Ventures (JVs), one of the more important types of collaborative relationship, have accelerated sharply during the past 20 years. Besides serving as a means of lessening political and economic risks by the amount of the partner's contribution to the venture, joint ventures provide a less risky way to enter markets that pose legal and cultural barriers than would be the case in the acquisition of an existing company.

Local partners can often lead the way through legal mazes and provide the outsider with help in understanding cultural nuances. A joint venture can be attractive to an international marketer:

1. When it enables a company to utilise the specialised skills of a local partner
2. When it allows the marketer to gain access to a partner's local distribution system
3. When a company seeks to enter a market where wholly owned activities are prohibited
4. When it provides access to markets protected by tariffs or quotas, and
5. When the firm lacks the capital or personnel capabilities to expand its international activities.

Notes

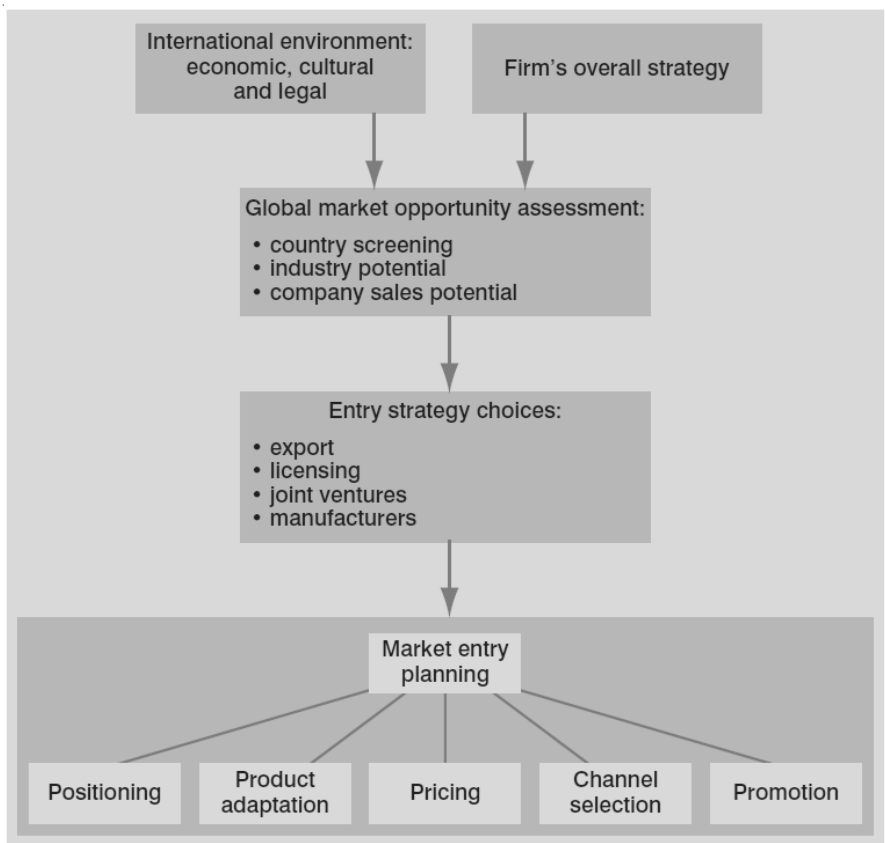
Did u know? A joint venture is differentiated from other types of strategic alliance or collaborative relationship in that a joint venture is a partnership of two or more participating companies that have joined forces to create a separate legal entity. Joint ventures should also be differentiated from minority holdings by an MNC in a local firm.

Four factors are associated with joint ventures:

1. JVs are established, separate, legal entities
2. They acknowledge intent by the partners to share in the management of the JV
3. They are partnerships between legally incorporated entities, such as companies, chartered organisations or governments, and not between individuals
4. Equity positions are held by each of the partners.

Nearly all companies active in world trade participate in at least one joint venture somewhere; many number their joint ventures in the dozens. A recent Conference Board study indicated that more than 50 per cent of Fortune 500 companies were engaged in one or more international joint ventures. In Japan alone, Royal Dutch Shell has more than 30 joint ventures; IBM has more than 35.

Figure 12.1: Foreign Market Entry



Source: http://highered.mcgraw-hill.com/sites/dl/free/0077122852/823243/gha22852_Ch11.pdf

Notes

Consortia

The consortium and syndicate are similar to the joint venture and could be classified as such except for two unique characteristics: (1) they typically involve a large number of participants; (2) they frequently operate in a country or market in which none of the participants is currently active. Consortia are developed for pooling financial and managerial resources and to lessen risks. Often, huge construction projects are built under a consortium arrangement in which major contractors with different specialities form a separate company specifically to negotiate for and produce one job. One firm usually acts as the lead firm or the newly formed corporation may exist quite independently of its originators.

Manufacturing

Another means of foreign market development and entry is manufacturing, also called a wholly owned subsidiary within a foreign country. A company may manufacture locally to capitalise on low-cost labour, to avoid high import taxes, to reduce the high costs of transportation to market, to gain access to raw materials, and/or as a means of gaining market entry. Seeking lower labour costs offshore is no longer an unusual strategy. A hallmark of global companies today is the establishment of manufacturing operations throughout the world. This is a trend that will increase as barriers to free trade are eliminated and companies can locate manufacturing wherever it is most cost effective.

There are three types of manufacturing investment by firms in foreign countries: (1) market seeking; (2) resource seeking; (3) efficiency seeking. Investments in China, for example, are often of the first kind, where companies are attracted by the size of the market. Investment in India, especially by a number of fashion garment producers such as Mexx and Marc O'Polo, are of the second type, while investments in Malaysia and Singapore by electronics manufacturers such as Intel and Motorola are of the third type.

Countertrade

Countertrade deals are now on the increase and represent a significant proportion of world trade. Countertrade ties the export and other foreign sales to an undertaking from the seller to purchase products from the buyer or a third party in the buyer's country.

There are several reasons behind the demand for counter-trade, such as promotion of local exports, saving scarce foreign exchange, balancing trade flows and/or ensuring guaranteed supplies. The terms and conditions for countertrade are not standardised and may be different from market to market. Other terms used for counter-trade include counter- purchase, buyback, compensation and offset, and barter. In the 1960s, Eastern European countries started demanding countertrade to achieve a balance in foreign trade.

Notes Nowadays, however, it is common practice in developing as well as in developed markets, and there are a number of companies that specialise in advising on counter trade and a number of trading houses that act as clearing houses for counter trade products.

Task Assume you are marketing director of a company producing refrigerators. Select one country in Asia and one in Latin America and develop screening criteria to evaluate the two markets. On the basis of these criteria make an analysis and select the country you should enter.

Notes

Self Assessment

Fill in the blanks:

1. There are three types of manufacturing investment by firms in foreign countries: market seeking; resource seeking; and ..... seeking.
2. Joint ventures (JVs), one of the more important types of ..... relationship.
3. Franchising is a rapidly growing form of ..... in which the franchiser provides a standard package of products, systems and management services, and the franchisee provides market knowledge, capital and personal involvement in management.
4. ..... occurs when a company (supplier) sells its product abroad using another company's (carrier) distribution facilities.

12.2 Definitions of Country Risk

Country risk is defined and described by various empirical researchers in different ways.

Some of the definitions of country risk are presented below:

- Root (1973) makes a distinction between transfer risks, operational risks, and risks on capital controls. The first is the potential for restrictions on the transfer of funds, products, technology and human capital. The second is the uncertainty about policies, regulations or governmental administrative procedures which might hinder results and management of operations abroad. The third relates to discrimination against foreign firms, expropriation, forced local share holding.
- Robock and Simmons (1973) assert that political risk in international investment exists when discontinuities occur in the business environment when they are difficult to anticipate, and when they result from political change.
- Levi (1990) defines country risk as the risk that, as a result of war, revolution or other political or social events, a firm may not be paid for its exports. According to Levi, country risk applies to foreign investment as well as to credit granted in trade. Country risk exists because it is difficult to use legal channels or to seize assets when the buyer is in another jurisdiction. Foreign buyers may be willing but unable to pay because, for example, their government unexpectedly imposes currency restrictions. Other added risks of doing business abroad include uncertainty about the possible imposition or change of import tariffs or quotas, possible changes in subsidization of local producers, and possible imposition of no tariff barriers.
- Levich (1998) defines country risk as the deviation from interest rate parity.
- Shapiro (1999) defines a country risk as the general level of political and economic uncertainty in a country affecting the value of loans or investments in that country. From a bank's stand point, it refers to the possibility that borrowers in a country will be unable to service or repay their debts to foreign lenders in a timely manner.
- Madura (2003) states that country risk is the potentially adverse impact of a country's environment on a (multinational) company's cash flows. Madura distinguishes between macro-and micro assessments of country risk. The first type of assessment is an overall risk assessment of a country without consideration of the multinational's business. Micro-assessment is the risk assessment of a country as it relates to the multinational's type of business.
- Eun and Resnick (2004) assert that country risk is a broader measure of risk than political risk, as the former encompasses political risk, credit risk, and other economic performances.

Notes

Political risk ranges from unexpected changes in tax rules to outright expropriation of assets held by foreigners. It arises from the fact that a sovereign country can change the "rules of the game" and that the affected parties may not have effective recourse.

- Eiteman et al. (2004,) distinguish between firm-specific, country-specific, and global-specific risk. Firm-specific risks are those risks that affect the MNE at the project or corporate level. Governance risk due to goal conflict between a MNE and its host government is the main political firm-specific risk. Foreign exchange and business risks also are firm-specific risks. Country-specific risks are those risks that also affect the MNE at the project or corporate level but are risks that originate at the country level. Transfer risk and cultural and institutional risks are the two main risk categories at the country level. The former concerns mainly the problem of blocked funds, whereas the latter spring from ownership structure, human resource norms, religious heritage, nepotism and corruption, intellectual property rights, and protectionism. Global-specific risks are those that affect the MNE at the project or corporate level but originate at the global level.

Examples: Terrorism, the anti globalization movement, environmental concerns, poverty, and cyber attacks.

The above definitions clearly indicate that there are a lot of different terms that are used to explain country risk. But one common characteristics that all seem have is "troubles abroad". However, the differences in the definition can have an important impact on the way in which the assessment and management of country risk is to be undertaken. For example, where some definitions focus on the risk status of a country, others include the impact on the value of the firm in their definitions. The first calls for general, country-specific, management and assessment techniques. The latter suggest that tailor-made, firm-specific management and assessment tools are more appropriate.

Self Assessment

Fill in the blanks:

5. ..... are those risks that also affect the MNE at the project or corporate level but are risks that originate at the country level.
6. ..... risk concerns mainly the problem of blocked funds.
7. ..... risk ranges from unexpected changes in tax rules to outright expropriation of assets held by foreigners.

12.3 Objectives of Country Risk Ratings

Following the rapid growth in the international debt of less developed countries in the 1970s and the increasing incidence of debt rescheduling in the early 1980s, country risk, which reflects the ability and willingness of a country to service its financial obligations, has become a topic of major concern for the international financial community. Country risk refers broadly to the likelihood that a sovereign state or borrower from a particular country may be unable and/or unwilling to fulfill their obligations towards one or more foreign lenders and/or investors. Count credit ratings are regarded as proxies for macroeconomic and political fundamentals that affect the probability of sovereign default. The rating agencies claim that they use qualitative factors in forming their opinion of a country's ability and willingness to service their debt. This relates to items such as a country's form of government, the adaptability of the political system, the public governance, the succession of government, the consensus about policy decisions, and

Notes

the integration into regional or global trade and financial system. Thus, the rating agencies seek to capture the probability of the occurrence of default by focusing on the creditworthiness of central governments and by providing an assessment of the risk of the sovereign itself.

Notes Investors and lenders, when evaluating the risks of a country, generally base their assessment on the political and social environment of a country.

Accordingly, a large portion of past research has focused on various political and economic factors affecting country risk assessment. Some studies have examined more specific country risks, such as the risk of terrorist threats. Others attempted to determine which risk factors affect foreign direct investment. One study sought to replicate Euromoney's and Institutional Investor's proprietary country risk ratings using a model which consisted of various macro-economic and political risk variables. The researchers found that both magazines' ratings could be replicated to a significant degree with only a few widely available economic statistics.

Serious financial crises have rocked several countries in the last two decades and have brought to fore the issue of financial market stability. These bouts of financial market instability have been the focus of attention of both academia and policy circles. This has alerted policy makers and analyst to pay attention to the problem of predicting, avoiding and managing financial crises. Calvo and Mendoza (2000) have argued that globalization is at the heart of this volatility, with highly diversified investors not paying much attention to economic fundamentals and following the herd in the presence of asymmetric information. Hayes (1998) argues that globalization of world trade and open capital markets are risky elements that can cause financial crises with rapid contagion effects, which threaten the stability of the international financial sector.

Political risk has been identified by various researchers as a factor that seriously affects the profitability of their international ventures. Political risk relates to the fear that governments might interfere with the free and unencumbered flow of capital into and out of a country. Ghose (1988) argues that political risk is analogous to sovereign risk and lies within the broader framework of country risk. Political risk emerges from events such as wars, attitude of the host government, internal and external conflicts, territorial disputes, stability of the local political government and terrorist attacks around the world. Along with political factors, economic and financial risk factors are also considered when assessing country risk.

12.3.1 Nature of Country Risk Assessment

Country risk is an indispensable tool for asset management as it requires the assessment of economic opportunity against political odds. The list of factors to be analysed in a country risk analysis study varies from forecaster to forecaster. For our discussion here, we can group the relevant factors into two important categories: political factors and economic factors. The various indicators of political factors are discussed first, followed by the indicators of economic factors.

Political Risk Indicators

"Political risk is 50% of the exercise but inseparable from economic risk", says Hans Belesak, President of Political Risk Consultants.

It is very difficult to measure the "political risk" associated with a particular country or a borrower. Assessing political risk is a continuous problem and it is very difficult to identify a few political risk factors which significantly affect the country risk.

Notes

Some of the more common forms of political risk indicators include:

(i) ***Stability of the Local Political Environment:*** The level of political risk for each nation is analysed here. Measures here take cognisance of changes in the government, levels of violence in the country, internal and external conflict and so on. Indices of this sort are intended to assess whether the government in power at a particular point in time will be there in the future and hence, the extent to which the existing political status can be expected to continue.

(ii) ***Consensus Regarding Priorities:*** This is a measure of the degree of agreement and unity on the fundamental objectives of government policy and the extent to which this consensus cuts across party lines.

Example: The host government may support the MNCs and may be friendly towards the subsidiary, but the people of the foreign country may not be and may avoid purchasing its goods as a form of protest.

(iii) ***Attitude of Host Government:*** A variation of the above may be when the MNC satisfies the local people but faces the hostile attitude of the host government. The host government can impose restrictions by charging additional corporate taxes, blockage of funds, funds transfer restrictions (which affect after-tax cash flows sent to the parent) and so on. Also, the blockage of funds transfer by the host government would force subsidiaries to undertake projects that are not optimal, just to make use of funds. The returns here might be inferior to other uses of funds. Hence, this represents political risk in that it reflects a country's political characteristics and in turn influences the MNC's cash flows.

(iv) ***War:*** If a war is possible for the country under scrutiny, the safety of employees hired by the MNC would be affected. Also, the project cash flows generated from such countries will be more uncertain due to volatile business cycles.

(v) ***Mechanisms for Expression of Discontent:*** This is related to the ability to effect peaceful change, provide internal continuity and to alter direction of policy without major changes of the political system. A subsidiary will not necessarily be affected by changing governments, if the attitude towards the subsidiary remains the same.

Economic Risk Indicators

Along with political factors, economic risk factors should also be considered when assessing country risk. Some of the economic factors that should be considered are:

1. ***Inflation Rate:*** The inflation rate is used as a measure of economic instability, disruption and government mismanagement. Inflation also affects the purchasing power of consumers and hence the consumers demand for MNC's goods.

2. ***Current and Potential State of the Country's Economy:*** A MNC that exports to a country or develops a subsidiary in a country is highly concerned with that country's demand for its product. This demand, in turn, is strongly influenced by the country economy, i.e., assessment of current plans for the economy, feasibility of development plans, main bottlenecks, etc.

   As the present state of a country's economy is dependent on several economic factors, an MNC should consider all these factors. Some of the important factors include level of external debt, foreign exchange, current account, balance of payments, GDP growth, interest rates, etc. Exchange rates can strongly influence the demand for the countries' exports, which in turn affects the country's products and income level. The relationship between the level of interest payments, the current account and external debt becomes highly interactive as debt rises. Initially, the current account must be reconciled with the external

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finance available. The analyst must then assess whether the country's future borrowing requirements are consistent with its debt servicing capacity.

3. ***Resource Base:*** The resource base of a country consists of its national, human and financial resources. Other things remaining the same, a nation with substantial natural resources is a better economic risk than the one without those resources. But other things are not always equal. Thus, resource rich nations such as Mexico or Argentina are more risky than South Korea or Taiwan. This is due to the quality of human resource and the degree to which these resources are allowed to be put to their most efficient use.

4. ***Adjustment to External Shocks:*** The ability of the country to withstand unforeseen shocks is another important factor in economic analysis. History shows that the vulnerability of external shock varies from nation to nation, with some countries dealing successfully with these shocks and others succumbing to them. Domestic policies play a crucial role in determining how effectively a nation copes with external shocks.

Some of the important factors which can be examined here include imports and exports as a proportion of GDP, vulnerability of the economy to changing prices of main exports and imports, compressibility of imports, i.e., extent to which imports consist of non-essentials, diversification of exports by category and by geographical area, etc.

Caution The assessment of sovereign creditworthiness essentially focuses on the identification of prospective country specific risks, namely economic and political factors. This analysis helps the risk specialist in determining which countries represent acceptable risk. It then advises the amount to be lent to specific countries.

Self Assessment

Fill in the blanks:

8. The …… rate is used as a measure of economic instability, disruption and government mismanagement.

9. The …… base of a country consists of its national, human and financial resources.

10. The ability of the country to withstand unforeseen shocks is another important factor in …… analysis.

12.4 Techniques to Assess Country Risk

The techniques to assess country risk mainly try and identify certain key economic, political and financial variables including a country's economic growth rate, its current account balance relative to gross domestic product and various ratios – debt to GDP, debt- service payments to GDP, savings to investment, interest payments to GDP, etc. These ratios mainly try and find out directly or indirectly a country's ability to repay its external financial obligations on schedule. Also, the broad parameters identified help to expose the basic strengths and weaknesses of a country. Listed below are some of the more popular indicators to assess country risk.

Debt Related Factors

The debt related factors are the quickest and commonest variables employed to test the possibility of a country defaulting due to debt. To predict the risk of default, there are two different theoretical

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approaches. One approach regards default as arising out of an unintended deterioration in the borrowing country's capacity to service its debt. The other approach views the probability of default of external debt as an international decision made by the borrower based on an assessment of the costs and benefits of rescheduling. Difficulties in debt servicing could be a result of short-term liquidity problems or could be attributed to long-term insolvency problems.

For example, countries with a high export growth rate are more likely to be able to service their debt and are expected to enjoy better creditworthiness rating since exports are the main source of foreign exchange earnings for most countries – particularly developing economies. Thus, lower export earnings are likely to increase the likelihood of short-term liquidity problems and hence difficulties with debt servicing. Similarly, a decline in the growth of output could contribute to long-term insolvency problem and lower the country's credit rating.

The absolute size of a country's debt has little significance unless it is analysed in relation to other variables.

The debt service indicators include:

- Debt/GDP (to rank countries according to external debt).
- Debt/Foreign Exchange receipts (Important ratio – solvency).
- Interest payments/Foreign exchange receipts (liquidity).
- Debt-service ratio (relates debt service requirements to export incomes).
- Short-term debt/Total exports.
- Imports/GDP (sensitivity of domestic economy to external development).
- Foreign public debt/GNP (relates external debt to country's wealth).
- Level of net disbursed external debt/GNP.
- Net disbursed external debt/Export of goods and services.
- Net interest payment/Exports of goods and services.
- Current account balance on Gross Net Product (countries with large current account deficit are usually less creditworthy).

Balance of Payments

The fundamental determinate of a country's vulnerability is its balance of payment. The balance of payments management is a function of, among other things, internal goals and changing external circumstances.

A very useful indicator of country risk analysis is the current account balance. It summarises the country's total transactions with the rest of the world for goods and services (plus unilateral transfers) and represents the difference between national income and expenditure. It also indicates the rate at which a country is building foreign assets or accumulating foreign liabilities.

The balance of payments on current account is negatively related to the probability of default since the current account deficit broadly equals the amount of new financing required. Countries with large current account deficits are thus less creditworthy.

Another useful indicator of the balance of payment position of a country is the reserve to imports ratio. Reserves provide a short-term safeguard against fluctuation in foreign receipts. The larger the reserves are relative to imports, the more reserves are available to service debt and the lower is the probability of default.

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Did u know? Developing countries are more vulnerable than mature economies to balance of payments difficulties because of high import propensities and a heavily skewed dependence on few exports.

The balance of payment indicators include:

- Percentage increase in imports/Percentage increase in Gross Domestic Product (this ratio shows the income elasticity of demand for exports).
- Foreign income elasticity of demand for the exports.
- Under or overvaluation of the exchange rate, on a purchasing power parity basis.
- Current Account/GNP (a measure of the country's net external borrowings relative to country size).
- Effective Exchange Rate Index (measures the relative movements in domestic and international prices).
- Imports of goods and services/GDP.
- Non-essential consumer goods and services/Total imports.
- Exports to 10–15 main customers/Total exports.
- Exports of 10–15 main items/Total exports.
- External reserves/Imports.
- Reserves as % of imports (goods and services).
- Exports as % of imports (goods and services).

Economic Performance

Economic performance can be measured in terms of a country's rate of growth and its rate of inflation. The inflation rate can be regarded as a proxy for the quality of economic management. Thus, the higher the inflation rate, the lower the creditworthiness rating. The economic performance can be measured by a set of ratios that focus on the long-term growth prospects and any economic imbalances of the economy.

The significant ratios that can be used to measure economic performance are:

- Gross National (or domestic) Product per capita (this ratio measures the level of development of a country).
- Gross Investment/Gross Domestic Product. (This ratio is called the propensity to invest ratio and captures a country's prospects for future growth. The higher the ratio the higher the potential economic growth.)
- Inflation (Change in consumer prices as an annual average in %. This measures the quality of economic policy).
- Money supply (serves as an early indicator for future inflation).
- Gross Domestic Savings/Gross National Product.

Political Instability

There have been several occasions when sovereign borrowers with the capacity to service their external debts have defaulted for purely political reasons. Political instability undermines the

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economic capacity of a country to service its debt. Political instability has both direct effect and an indirect effect on the credit rating of a country.

Political instability has an indirect effect on debt servicing difficulties within a country and reduces a country's willingness to service debt. Indirectly, political instability generates adverse consequences for economic growth, inflation, domestic supply, level of import dependency and creates foreign exchange shortage from an imbalance between exports and imports. Burton and Inoue (1985) have suggested that disruptive political events frequently precede debt rescheduling. Also, the time-lag between political instability and ultimate loan default might be quite short in countries with low foreign exchange reserves or low levels of GDP per capita.

The direct effect of political instability on debt service problems emerges in the form of unwillingness rather than an inability to service the debt.

The political instability indicators which can be considered are:

1. The political protest, for example, protest demonstrations, political strikes, riots, political assassination, etc.
2. Successful and unsuccessful irregular transfer, e.g., coup attempt, etc.

Checklist Approach

A number of relevant indicators that contribute to a firm's assessment of country risk are chosen and a weight is attached to each. All aspects of risk are summarised in a single country rating that can be readily integrated into the decision making process. Factors having greater influence on country risk are assigned greater weights.

The weighted checklist approach employs a combination of statistical and judgemental factors. Statistical factors try and assess the performance of a country's economy in the recent past in the expectation that this will provide an insight into the future. These factors can be compiled relatively easily. The analyst can choose from a wide range of statistical factors: rapid rise in production costs, interest-service ratio, real GDP growth, debt/GDP, imports/reserves, foreign exchange receipt, export/GDP ratio, import/GDP, etc.

The inclusion of judgemental factors gives some indication of a country's future ability and willingness to repay. They are essentially qualitative in nature requiring an in-depth knowledge of the country concerned and cannot be very easily compiled. Factors in this category include exchange rate management, political stability (i.e., possibility of war, riots, disorders), balance of payments problems (i.e., fall in export earnings, deterioration of BOP), etc.

The weighting of the judgemental and statistical factors could then be done to arrive at a risk ranking for countries. Those factors that presumably have a greater influence on country risk could be assigned greater weights. However, the choice of the weights and the measurement of the factors is highly subjective.

Hence the method though useful has its limitations.

Self Assessment

Fill in the blanks:

11. The higher the inflation rate, the lower the …… rating.
12. A very useful indicator of country risk analysis is the …… account balance.

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12.5 Raters of Country Risk

Rating of a country's creditworthiness is mainly compiled by two magazines, Institutional Investor and Euromoney. Institutional Investor has been publishing the ratings since 1981 while for Euromoney the ratings are available since 1982. The ratings of both the magazines are based on an evaluation of a number of macro economic financial and political variables.

Table 12.1 gives the criteria for assessing country risk by the two main rating agencies, Euromoney and Institutional Investor.

Table 12.1: Criteria for Assessing Country Risk

Rating Agencies	Criteria for Assessing Country Risk
Institutional Investor	Information provided by 75–100 leading banks that grade each country on a scale of 0–100, with 100 representing least chance of default. Individual responses are weighted using a formula that gives more importance to responses from banks with greater worldwide exposure.
Euromoney	Assessment based on the following indicators. (Total score 100) • Political risk (25 per cent) • Economic performance (25 per cent) • Debt Indicators (10 per cent) • Credit Ratings (10 per cent) • Rescheduling (10 per cent) • Access to bank finance (5 per cent) • Access to capital markets (5 per cent) • Access to short-term finance (5 per cent) • Discount available on forfeiting (5 per cent)

The table suggests that there is a definite relationship between a country's credit rating as given by the two rating agencies and economic, financial and political variables specific to the country. In addition, a fair amount of subjectivity is also involved in the analysis. The judgement of the rating analysts in evaluating the economic variables, determining the degree of political stability and assigning weight to the different variables within the group introduces the qualitative dimension in the technique of country risk analysis.

Euro-money Country Risk Rankings

The impact of the credit crunch spread across the world over the past 12 months. Eastern Europe was badly hit, and the Middle East and Asia could no longer claim to be immune.

Few would think the US has become safer as an investment over this period. But at times of uncertainty investors go with what they know, and the US rises to sixth place – an Obama bounce, perhaps?

Singapore continues its inexorable rise, it seems, towards a place in the global top 10 and is clearly the safe haven within the Asia-Pacific region.

The biggest fallers will come as no surprise: Iceland, with its bankrupt banking system, falls 20 places and will be lucky to stay in the top 50 next time round; India's fall follows the atrocities of the Mumbai terror attacks.

Table 12.2 presents the March 2011 Euromoney Country risk Rankings.

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Table 12.2: Current Risk Score

Current Rank	Sept '10	Country Name	Current Score	Economic (% Score, 30% Weighting)	Political (% Score, 30% Weighting)	Structural (% score, 10% weighting)	Credit Rating (Score out of 10, Weighting 10%)	Debt Indicators (Score out of 10, Weighting 10%)	Access to Capital Markets (Score out of 10, Weighting 10%)
1	1	Norway	93.44	90.40	92.97	84.10	10.00	10.00	10.00
2	6	Luxembourg	91.03	81.00	93.67	86.25	10.00	10.00	10.00
3	2	Switzerland	89.59	82.50	87.23	86.71	10.00	10.00	10.00
4	4	Denmark	89.21	78.33	92.10	83.25	10.00	10.00	9.75
5	3	Sweden	88.74	78.17	90.83	82.83	10.00	10.00	9.75
6	12	Singapore	87.48	78.25	86.28	83.75	10.00	10.00	9.75
7	5	Finland	86.96	74.00	89.29	79.71	10.00	10.00	10.00
8	8	Netherlands	86.67	75.60	87.38	77.70	10.00	10.00	10.00
9	7	Canada	86.17	73.50	88.97	76.75	10.00	10.00	9.75
10	10	Australia	85.36	74.50	85.65	77.63	9.79	10.00	9.75
11	9	Hong Kong	84.84	81.67	82.83	83.25	9.17	10.00	8.00
12	13	Germany	84.43	70.92	84.59	77.79	10.00	10.00	10.00
13	11	Austria	84.01	72.20	82.28	76.65	10.00	10.00	10.00
14	14	New Zealand	83.62	62.67	91.15	81.50	9.58	10.00	9.75
15	17	United States	81.60	60.67	85.25	78.35	10.00	10.00	10.00
16	16	United Kingdom	80.04	59.80	82.91	74.80	10.00	10.00	9.75
17	23	Taiwan	80.04	74.60	75.89	74.70	7.92	10.00	9.50
18	17	France	79.89	62.56	79.30	73.39	10.00	10.00	10.00
19	22	Cyprus	77.02	67.00	75.97	74.29	7.71	10.00	9.00
20	20	Belgium	76.87	62.25	78.82	71.75	9.38	10.00	8.00
21	21	Qatar	75.53	79.75	66.17	59.81	8.75	10.00	7.00
22	30	Macau	75.52	80.00	60.00	74.00	8.13	10.00	8.00
23	28	Malta	75.27	66.67	70.41	78.75	7.29	10.00	9.00
24	29	Czech Republic	74.77	69.55	71.83	65.59	7.29	10.00	8.50
25	19	Japan	74.66	53.80	76.79	70.80	8.54	10.00	9.88
26	24	Slovenia	74.45	57.50	76.22	65.81	8.75	10.00	9.00
27	15	Chile	73.61	75.63	75.42	68.34	7.50	7.95	6.00
28	27	Slovak Republic	73.42	66.00	71.79	63.20	7.50	10.00	8.25
29	25	Korea South	72.28	65.75	67.86	69.13	7.29	10.00	8.00
30	32	Italy	71.20	57.71	65.94	70.00	8.13	10.00	9.00
31	40	Poland	70.99	64.36	69.67	58.02	6.46	10.00	8.50
32	39	Kuwait	70.47	76.00	55.34	55.00	8.54	10.00	7.00
33	34	United Arab Emirates	69.70	67.50	59.71	53.96	8.13	10.00	8.00
34	37	Spain	67.73	44.11	71.26	67.61	9.38	10.00	7.00
35	41	Oman	67.65	71.25	61.99	54.63	7.19	10.00	5.00
36	38	Bahrain	67.39	71.67	60.47	58.58	6.88	10.00	5.00
37	31	Israel	66.83	59.00	68.11	71.25	7.08	10.00	4.50
38	35	Saudi Arabia	65.12	72.14	51.67	53.36	8.13	10.00	4.50
39	60	Malaysia	64.75	60.80	60.63	65.40	6.25	8.04	7.50
40	36	China	63.55	66.88	48.47	52.41	7.71	8.73	7.25
41	42	Brazil	63.22	67.75	64.50	60.92	4.38	8.56	4.50

Contd...

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42	45	Thailand	63.00	65.33	52.89	66.00	5.42	9.03	6.50
43	26	Ireland	61.72	38.27	66.69	73.52	7.92	10.00	5.00
44	33	Portugal	61.35	42.14	64.31	61.36	7.29	10.00	6.00
45	63	Panama	60.42	69.33	61.50	41.25	4.38	8.62	4.00
46	47	Iceland	59.84	41.50	73.49	61.88	4.17	10.00	5.00
47	53	Hungary	59.67	47.55	59.41	55.89	5.00	10.00	7.00
48	44	South Africa	59.20	55.44	60.36	54.31	5.83	9.18	4.00
49	65	Bahamas	59.16	38.00	62.74	50.00	5.94	10.00	8.00
50	51	Estonia	58.79	62.75	70.32	67.88	7.08	0.00	5.00
51	48	Colombia	58.72	64.22	61.30	58.36	3.75	8.47	3.00
52	61	Indonesia	58.27	62.75	51.72	53.38	3.33	8.50	6.75
53	43	Mexico	58.13	56.00	55.14	62.88	5.21	8.81	4.50
54	50	Turkey	57.07	60.94	60.07	56.70	3.33	7.25	4.50
55	55	Lithuania	57.05	47.00	62.48	57.83	5.21	6.72	6.50
56	49	India	56.96	57.00	49.66	51.82	4.38	8.40	7.00
57	52	Russia	56.83	61.56	44.30	49.04	5.21	8.45	6.50
58	46	Peru	56.70	65.25	51.76	47.56	4.38	8.95	3.50
59	54	Croatia	56.47	46.17	56.63	57.67	4.38	10.00	5.50
60	66	Sri Lanka	54.86	56.33	52.01	71.00	1.88	8.41	5.00
61	58	Philippines	54.46	52.67	50.08	57.50	2.92	8.23	6.75
62	102	Botswana	54.00	47.00	50.96	33.33	6.56	8.69	6.00
63	59	Bulgaria	53.82	57.50	52.57	42.80	4.58	6.91	5.00
64	68	Latvia	52.47	46.17	61.14	54.67	3.96	6.85	4.00
65	56	Greece	52.38	38.85	56.12	59.52	3.96	10.00	4.00
66	88	Brunei	51.81	59.00	50.00	0.00	0.00	10.00	9.00
67	62	Morocco	51.28	46.67	52.21	51.75	4.17	8.78	3.50
68	67	Jordan	50.42	46.67	54.76	48.00	3.13	9.06	3.00
69	83	Armenia	49.66	52.00	51.11	50.92	2.81	7.57	3.25
70	91	Bermuda	49.48	0.00	69.00	0.00	8.96	10.00	9.75
71	75	Vietnam	49.46	46.00	44.26	50.83	2.29	8.27	6.75
72	73	Romania	49.09	49.78	44.79	45.19	3.96	6.99	5.25
73	74	Costa Rica	48.81	39.00	54.44	54.38	3.33	8.02	4.00
74	72	Kazakhstan	47.91	55.00	44.76	52.00	4.79	4.00	4.00
75	57	Uruguay	47.79	54.50	34.72	63.13	2.92	8.33	3.50
76	71	Georgia	47.77	44.00	55.34	60.56	1.88	8.56	1.50
77	77	Namibia	47.65	50.00	63.03	58.75	4.38	0.00	3.50
78	87	Azerbaijan	46.95	52.75	38.91	28.44	3.96	9.12	3.50
79	81	Libya	46.85	62.67	40.52	54.58	5.94	0.00	4.50
80	114	Honduras	46.34	54.00	43.00	48.00	1.25	8.19	3.00
81	69	Tunisia	45.41	35.50	43.22	49.69	5.00	7.35	4.50
82	80	El Salvador	45.16	50.00	45.36	36.25	3.13	6.78	3.00
83	85	Gabon	44.85	53.00	32.07	56.50	2.50	8.21	3.00
84	105	Mauritius	44.78	29.50	43.98	31.88	5.00	9.54	5.00
85	95	Ghana	44.71	47.71	46.94	38.39	1.56	8.89	2.00
86	70	Serbia	44.34	43.25	48.23	58.81	2.50	6.54	2.00
87	90	Macedonia (FYR)	44.23	46.67	44.61	38.33	3.44	7.06	2.50
88	64	Egypt	44.01	38.11	39.69	43.36	3.54	9.30	3.50
89	78	Ukraine	43.97	46.62	42.48	54.73	1.46	6.58	3.75
90	86	Argentina	43.73	45.63	41.68	57.03	1.04	8.32	2.50

Contd...

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91	76	Lebanon	43.53	45.25	45.58	61.31	1.46	7.22	1.50
92	82	Albania	42.77	38.00	41.47	48.38	1.88	8.48	3.75
93	92	Venezuela	42.47	47.67	32.16	53.67	1.88	9.30	2.00
94	118	Mongolia	42.09	44.33	40.85	30.00	1.88	7.63	4.00
95	110	Nigeria	42.05	45.56	33.67	45.75	2.19	9.54	2.00
96	79	Paraguay	40.33	51.00	24.70	53.25	1.25	9.07	2.00
97	112	Seychelles	40.27	45.00	51.00	60.00	0.63	3.37	1.50
98	96	Belarus	39.84	43.75	34.38	27.81	1.88	8.73	3.00
99	101	Algeria	39.50	45.80	37.40	50.60	0.00	5.50	4.00
100	100	Mozambique	38.79	41.00	47.00	0.00	1.56	8.74	2.00

Source: http://www.euromoney.com/Article/2773235/Country-risk-March-2011-Country-rankings-and-acknowledgements.html

Caselet

Rupee Outlook

With growing tensions at the Indo-Pak border and the statements by the Prime Minister that India cannot show infinite patience, the outlook for the rupee remains very negative. Any active measures taken up by India, either in retaliation or on its own will have a severe impact on the market and the currency might even move further close to the £ 50 level.

(a) Assess the likely consequences on the rupee/£ due to the tension between India and Pakistan.

(b) Describe the various political factors that expose a business to country risk.

(c) Under the current scenario, is it advisable for an MNC to invest in India? Elaborate.

Source: *International Financial Management*, Madhu Vij, Excel Books.

12.6 Model for Country Risk Analysis for India

The rankings of countries presently being published by various agencies and journals according to their riskiness is useful inasmuch as it ensures comparability and promotes consistency. However, it fails to depict whether or not the countries near the bottom of the scale are still acceptable risk. Even though, over a period of time, the rankings may remain the same, countries at the lower end of the scale may fall into the unacceptable category due to increasing country risk.

This brings us to the concept of country risk rating. Country risk rating refers to the degree or level of risk and is a device used to denote the degree of country risk by a figure. Also risk rating is an indispensable tool for ensuring the comparability of risk between countries having different size, location, development, etc.

The following section now makes an attempt to develop a country risk rating device for a country like India. For developing a country risk rating device the first step is to identify the important factors in determining country risk. The three important indicators to measure country risk could be:

1. Economic factors
2. Political factors
3. Social factors

Notes

These three factors, in turn, depend on a variety of factors and will vary with the time period and the country being examined.

The next step is to assign values to the various sub-factors. For example, the economic factors can be assigned value in such a manner that a score of 1 is very favourable, i.e., lowest risk whereas a score of 5 is very unfavourable, i.e., highest risk (i.e., the range is from 1 to 5).

Favourable → ← Unfavourable

1——————2——————3——————4——————5

Representing their degree of importance the economic factors are then assigned weights which should add up to 100 per cent. The assigned values of the factor times their respective weight can then be summed up to derive an economic risk rating. The process described for deriving the economic risk rating is then repeated to derive both the political and social risk rating.

Once the three risk rating scores have been arrived at, a country's overall country risk rating as related to a specific project can be determined by assigning weights to the economic, political and social ratings according to their perceived importance. The three weights must total to 100 per cent. The economic, political and social ratings multiplied by their respective weights would determine the overall country risk rating for a country as related to a particular project.

Table 12.3 illustrates the country risk assessment for a hypothetical project in a proposed hypothetical country. The number of relevant factors and the assignment of weights to the factors as per their degree of importance, under each of the three categories, will vary with the project being planned and the type of country being assessed. Then, the overall country risk rating is determined. There are four economic factors, five political factors, and three social factors that determine the overall country risk rating. Economic risk factor A might reflect the quality of labour force, economic risk factor B internal economic growth, economic risk factor C, investment on social infrastructure and so on. Political risk factor A might reflect the degree of political tension within the country, political risk factor B the degree of political tension with the neighbouring countries and so on. Social risk factor A might reflect the environment problems and so on. Column I lists the three categories of factors—Economic Risk factors, Political Risk factors and Social Risk factors. In Column 2, values are assigned to each factor within a range of 1 to 5 depending upon the risk perceived. Score 1 signifies lowest risk while score 5 signifies highest risk. Column 3 assigns weights to each factor in accordance with their importance. Column 4 determines the risk rating for each factor, which is arrived at by multiplying column 2 with column 3.

Table 12.3: Country Risk Assessment

Column Risk Factors (1)	(2) Rating Assigned to Factor	(3) Weight Assigned to Factor as per Importance	(4) = (2) × (3) Weighted value
Economic Risk Factor			
Economic Factor A	2	20%	.4
Economic Factor B	1	30%	.3
Economic Factor C	1	40%	.4
Economic Factor D	2	10%	..2
Economic Risk Rating		100%	**1.3**
Political Risk Factor			
Political Factor A	1	10%	.1
Political Factor B	2	10%	.2

Contd...

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Political Factor C	4	20%	.8
Political Factor D	3	10%	.3
Political Factor E	2	50%	1.0
Political Risk Rating		100%	**2.4**
Social Risk Factor			
Social Factor A	1	50%	.5
Social Factor B	2	50%	1.0
Social Risk Rating		100%	**1.5**
Column 1	**Column 2**	**Column 3**	**Column 4 = (2) * (3)**
Category	**Rating as determined above**	**Weights assigned to each Risk Category**	**Weighted Ratings**
Economic Risk	1.3	30%	.39
Political Risk	2.4	60%	1.44
Social Risk	1.5	10%	.15
Overall Risk Rating		100%	**1.98**

The economic risk rating for the given example is 1.3, Political risk rating 2.4 and Social risk rating 1.5. This signifies that the economic and social condition of the country is better than its political condition. Once the three risk ratings have been determined, the overall country risk rating can be calculated, as shown in the lower part of Table 12.3. Political risk (weight 60%) is perceived to be a much more important factor than economic risk (weight 30%) and social risk (weight 10%) in the given example. The overall country risk rating as calculated in the lower portion of Table 12.3 is 1.98 (based on a scale of 1–5). In absolute terms, the rating appears to be satisfactory but the final answer depends upon the acceptable level of risk as related to the proposed project as also the risk tolerance of the country in question.

Thus, after developing an overall country risk rating, the first step is to determine whether the rating suggests that the risk is tolerable. If the country risk is too high (e.g., the country is often engaged in war), the proposed project need not receive further consideration. If the risk rating of country is tolerable, then the firm needs to further analyse the feasibility of projects.

Notes To determine whether the project is feasible, capital budgeting technique from the perspective of an MNC can be used.

Thus, country risk analysis is a difficult task and recent events in several countries have dramatised the importance of country risk analysis. Country risk analysis requires a comprehensive and coordinated approach and also demands constant monitoring of key variables and reliable assessment of the policies of the government. Correct, systematic and up-to-date information is essential for the analyst to increase his understanding and manage country risk in the best possible manner. Yet, many times it may be difficult to anticipate country crisis in advance until it is too late. In some countries crisis occur randomly and without prior warning.

Practitioners of country risk face a daunting task in their selection of variables and evaluation systems in assessing a country's performance. With this approach, a number of key economic variables could serve as indicators of future liquidity and solvency problems. For example, higher the ratio of debt to GDP, greater is the threat of a sudden liquidity crisis and lower is the country's rating. Similarly, lower export earnings are likely to increase the likelihood of short-term liquidity problem and hence problems with debt servicing. The balance of payments on current account is another important variable in assessing country risk. If the balance of payments on the current account is positive, the creditworthiness of the country under analysis

Notes

would be expected to be high. Inflation has a negative effect on credit rating with high inflation countries being generally ranked lower to countries with low or moderate inflation.

Country credit rating by some institutions such as Euromoney, Institutional Investor, Business International's country assessment system, International Country Risk Guide, etc., is an attempt to assess country risk on an ongoing basis. For example, Euromoney now gives the country risk rankings after every 6 months. Periodic country visits to countries of special interest and regular contact with people are essential for improving the quality of country risk analysis.

Task Identify a few economic and political factors that are important in determining country risk. You could use the world development indicators to calculate the various economic and political factors. The factors identified could serve as the explanatory variables. For the dependent variable you could use the country credit worthiness rating as reported in the Institutional Investor or Euromoney Journal. The multiple regression analysis technique could be then used to identify the determinants of country risk rating.

Self Assessment

Fill in the blanks:

13. If the balance of payments on the current account is ……, the creditworthiness of the country under analysis would be expected to be high.
14. Inflation has a …… effect on credit rating.
15. Country risk analysis requires a comprehensive and coordinated approach and also demands constant monitoring of key variables and reliable assessment of the policies of the …… .

Case Study

Managing Country Risk

Fund managers are becoming increasingly aware that they need to take a view on currency movements as well as on the prospects for bonds and equities.

Since 1991, by liberalizing its economy, India has been struggling to gain a firm position in the global economy. Though it has attracted many foreign investors, it has not succeeded in retaining them. Most of the companies have left the country either because of the infrastructure, which has to go a long way before they meet the international standards or because of the government policies, which are not favorable for carrying out business in India. The basic requirements for carrying on any business like power, roads, telecommunication, etc. are not up to the mark.

Questions

1. Identify the financial and political factors for an MNC to consider while assessing country risk in India.
2. Describe the various steps taken by the government in the last 2-3 years to attract more foreign players.
3. How important is political risk for a country like India? Elucidate with examples.

Source: *International Financial Management*, Madhu Vij, Excel Books.

Notes

12.7 Summary

- Expanding markets around the world have increased competition for all levels of international marketing. To keep abreast of the competition and maintain a viable position for increasingly competitive markets, a global perspective is necessary.
- Global competition also requires quality products designed to meet ever-changing customer needs and rapidly advancing technology.
- Cost containment, customer satisfaction and a greater number of players mean that every opportunity to refine international business practices must be examined in the light of company goals.
- Collaborative relationships, strategic international alliances, strategic planning and alternative market entry strategies are important avenues to global marketing that must be implemented in the planning of global marketing management.
- Country risk and credit worthiness have become important over the years and despite analytical difficulties there has been a growth in interest in recent years as well as a growth in various agencies in the systematic valuation of country risk, in fact, country risk analysis is a difficult task and it may also change over time.
- The factors that need to be analysed in a country risk analysis study are political risk and economic risk indicators. Some of the popular indicators to assess country risk are—debt related factors, the balance of payments position of a country, economic performance, political instability and the checklist approach. Important among the debt related factors are—Debt/GDP, Debt/FE Receipts, Debt service ratio, short-term debt/total exports and import/GDP.
- Country risk analysis at a micro level can be conducted by formulating a model. Various economic, political and social factors can be identified and then rated on a five point-scale. Weight can then be designed to each risk category—i.e. economic risk, political risk and social risk which should add up to 100 per cent.
- The rating for each multiplied by the weights assigned to each risk category gives us the overall score for the country concerned.

12.8 Keywords

Consensus Regarding Priorities: This is a measure of the degree of agreement and unity on the fundamental objectives of government policy and the extent to which this consensus cuts across party lines.

Country Risk: Country risk the general level of political and economic uncertainty in a country affecting the value of loans or investments in that country.

Franchising: Franchising is a rapidly growing form of licensing in which the franchiser provides a standard package of products, systems and management services, and the franchisee provides market knowledge, capital and personal involvement in management.

Licensing: A means of establishing a foothold in foreign markets without large capital outlays is licensing.

Mechanisms for Expression of Discontent: This is related to the ability to effect peaceful change, provide internal continuity and to alter direction of policy without major changes of the political system.

Piggybacking: Piggybacking occurs when a company (supplier) sells its product abroad using another company's (carrier) distribution facilities.

Notes

Political Risk: Political risk relates to the fear that governments might interfere with the free and unencumbered flow of capital into and out of a country.

Resource Base: The resource base of a country consists of its national, human and financial resources.

12.9 Review Questions

1. "Political risk is 50% of the exercise but inseparable from economic risk". In this context explain the various economic and political factors that significantly affect country risk analysis.
2. Briefly explain the various techniques to assess country risk. Give examples to illustrate your answer.
3. Explain the criteria for assessing country risk by Euromoney and Institutional Investor.
4. 'Country risk analysis is a difficult task and recent events in several countries have dramatised the importance of country risk analysis.' Do you agree? Give examples to illustrate your answer.
5. How can exposure to country risk be reduced by a MNC in the long run? In this context explain why country risk analysis is not always accurate.
6. 'Five decades ago, Argentina was considered to be one of the wealthiest nations in Latin America. However, gross fiscal indiscipline has brought down the country to the current risk. The country today, is on the verge of collapse.'
   (a) Do you think there is a way out for Argentina?
   (b) What role do you envisage for the IMF in this regard? Can the IMF put together a rescue package for Argentina? Discuss.
7. Discuss the key indicators that MNCs should assess in calculating the degree of political and economic risk they face in a country, particularly one undergoing political and economic transition.
8. Briefly discuss a framework that can facilitate a formal assessment of country risk and its implications for corporate decision making.
9. 'Fiscal irresponsibility is one sign of a country that it is likely to be politically risky because it will probably have an insatiable appetite for money.' Elucidate. (Hint: An important indicator of country risk is the government deficit as a percentage of gross domestic product.)
10. Why is country risk analysis important for an MNC? Discuss with examples.

Answers: Self Assessment

1.	Efficiency	2.	Collaborative
3.	Licensing	4.	Piggybacking
5.	Country-specific risks	6.	Transfer
7.	Political	8.	Inflation
9.	Resource	10.	Economic
11.	Creditworthiness	12.	Current

13. Positive
14. Negative
15. Government

Notes

12.10 Further Readings

Books

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Online links

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http://my.safaribooksonline.com/book/-/9781118282762/part-four-valuation-and-the-structure-of-multinational-operations/9781118282762c12_xhtml

http://www.deloitte.com/assets/Dcom-India/Local%20Assets/Documents/Thoughtware/Managing_market_entry_risk_White_Paper.pdf

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Notes

Unit 13: Cross-border Capital Budgeting

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Objectives

After studying this unit, you will be able to:

- Explain the problems and issues in foreign investment analysis
- Discuss the techniques of capital budgeting

Introduction

The fundamental goal of the financial manager is to maximise shareholders' wealth. Shareholders' wealth is maximised when the firm, out of a list of prospective investments, selects a combination of those projects that maximise the company's value to its shareholders. This selection process requires the financial manager to discount the project cash flows at the firm's weighted average cost of capital, or the projects' required rate of return, to determine the net present value. Alternatively, the internal rate of return that equates project cash flows to the cost of the project is calculated. Finance managers generally believe that the criteria of net present value is the most appropriate in domestic capital budgeting since it will help the company to select only those investments which maximise the wealth of the shareholders.

Capital budgeting for multinational firms uses the same framework as domestic capital budgeting. However, multinational firms engaged in evaluating foreign projects face a number of complexities, many of which are not there in the domestic capital budgeting process.

Foreign Complexities: Multinational capital budgeting encounters a number of variables and factors that are unique for a foreign project and are considerably more complex than their domestic counterparts. The various factors are:

1. Parents cash flows are different from project cash flows.
2. All cash flows from the foreign projects must be converted into the currency of the parent firm.
3. Profits remitted to the parent are subject to two taxing jurisdictions – the parent country and the host country.

Notes

4. Anticipate the differences in the rates of national inflation as they can result in changes in competitive position and thus in cash flows over a period of time.
5. The possibility of foreign exchange risk and its effect on the parent's cash flows.
6. If the host country provides some concessionary financing arrangements and/or other benefits, the profitability of the foreign project may go up.
7. Initial investment in the host country may benefit from a partial or total release of blocked funds.
8. The host country may impose various restrictions on the distribution of cash flows generated from foreign projects.
9. Political risk must be evaluated thoroughly as changes in political events can drastically reduce the availability of expected cash flows.
10. It is more difficult to estimate the terminal value in multinational capital budgeting because potential buyers in the host or parent company may have widely different views on the value to them of acquiring the project.

13.1 Problems and Issues in Foreign Investment Analysis

Some of these issues in foreign investment analysis are as follows:

Foreign Exchange Risk

Multinational firms investing abroad are exposed to foreign exchange risk – the risk that the currency will appreciate or depreciate over a period of time. Understanding of foreign exchange risk is important in the evaluation of cash flows generated by the project over its life cycle. To incorporate the foreign exchange risk in the cash flow estimates of the project, first an estimate is made of the inflation rate in the host country during the life span of the project. The cash flows, in terms of local currency, are then adjusted upwards for the inflation factor. Then the cash flows are converted into the parent's currency at the spot exchange rate multiplied by an expected depreciation or appreciation rate calculated on the basis of purchasing power parity. In certain specific situations, the conversion can also be made on the basis of some exchange rate accepted by the management.

Remittance Restrictions

Where there are restrictions on the repatriation of income, substantial differences exist between project cash flows and cash flows received by the parent firm. Only those flows that are remittable to the parent are relevant from the MNC's perspective. Many countries impose a variety of restrictions on transfer of profits, depreciation and other fees accruing to the parent company. Project cash flows consist of profits and depreciation charges whereas parent's cash flows consist of the amounts that can be legally transferred by the affiliate.

In cases where the remittances are legally limited, the restrictions can be circumvented to some extent by using techniques like internal transfer prices, overhead payments, and so on. To obtain a conservative estimate of the contribution by the project, the financial manager can include only the income which is remittable via legal and open channels. If this value is positive no more additions are made. If it is negative, we can add income that is remittable via other methods (not necessarily legal). Another adjustment in multinational capital budgeting is the problem of Blocked Funds. Accounting for blocked funds in the capital budgeting process depends on the opportunity cost of blocked funds.

Notes

If the blocked funds can be utilised in a foreign investment, the project cost to the investor may be below the local project construction cost. Also, if the opportunity cost of the blocked funds is zero the entire amount released for the project should be considered as a reduction in the initial investment.

Tax Issue

Both in domestic and multinational capital budgeting, only after-tax cash flows are relevant for project evaluation. However, in multinational capital budgeting, the tax issue is complicated by the existence of two taxing jurisdictions, plus a number of other factors. The other factors include the form of remittance to the parent—dividends management fees, royalties, etc., tax withholding provision in the host country, existence of tax treaties, etc. In addition, tax laws in many host countries discriminate between transfer of realised profits as against local reinvestment of these profits. The ability of the multinational firm to reduce its overall tax burden through the transfer pricing mechanism should also be considered.

To calculate the actual after-tax cash flows accruing to the parent the higher of the home or host country tax rate can be used. This will represent a conservative scenario in the sense that if the project proves acceptable under this alternative then it will necessarily be acceptable under the more favourable tax scenario. If not, other tax saving may be incorporated in the calculation to determine whether or not the project crosses the hurdle rate.

Project versus Parent Cash Flows

Substantial differences can exist between the project and parent cash flows because of tax regulations and exchange controls. Also, expenses such as management fees and royalties are returns to the parent company. In the light of substantial differences that can exist between parent and project cash flows, the important question is on what basis should the project be evaluated. Should the project be evaluated on the basis of

1. Its own cash flows?
2. Cash flows accruing to the parent company?
3. Both?

Evaluating a project on the basis of its own cash flows serves some useful purposes. The project must be able to compete successfully with other domestic firms and also earn a rate of return in excess of its locally based competitors. If not, the management and the shareholders of the parent company would be better off investing in the equity/government bonds of local firms.

However, such a comparison is many times not possible because most foreign projects replace imports and generally do not compete with existing local firms. Yet, evaluating projects on the basis of local cash flows has the advantage of avoiding currency conversion and hence eliminating problems involved with fluctuating/forecasting exchange rates changes for the life of the project.

A strong theoretically valid criterion in financial management is to evaluate the foreign project from the viewpoint of the parent company. Cash flows which are actually remitted to the parent are the ultimate yardstick for company performance and form the basis for distribution of dividends to the shareholders, repayment of interest and debt to lenders and other purposes. This helps in determining the financial viability of the project from the viewpoint of the MNC as a whole. The cash flows that are remitted to the parent consist of both operating cash flows and financial cash flows like fees and royalties, interest on loans given by the parent. However, the theory of capital budgeting postulates that an investment should be evaluated only on the basis of net after-tax operating cash flows generated by the project. Since these flows are usually lumped together, care should be taken that financial cash flows are not mixed with operating cash flows.

Notes

Stonehill and Nathanson have suggested a three-stage financial analysis of foreign projects. In the first stage, project cash flows are computed and analysed from the viewpoint of the subsidiary or the affiliate as if it were a separate entity. The second stage involves evaluation of the profit on the basis of forecasts of cash flows which will be transferable to the parent company. In the third and last stage, the analysis from the viewpoint of the parent company is widened to include indirect benefits or costs from the company as a whole, which are attributable to the foreign project in question.

Did u know? Various surveys conducted over a period of time show that MNCs evaluate foreign projects from both the parent's and the project's viewpoints. Surveys conducted by Stonehill and Nathanson (1968), Baker and Beandsley (1973), Oblak and Helm (1980), Bavishi (1981), Stanley and Block (1983) reveal that firms calculate and evaluate rates of returns by using cash flows to and from the parent as well as to and from foreign project alone.

Thus, most firms generally evaluate foreign projects from both parent and project viewpoints. Evaluating and analysing cash flows from both viewpoints reveals important aspects about the project's competitiveness and its contribution to the company as a whole. The project viewpoint provides a closer approximation of the effect on consolidated earnings per share, which all surveys mention is of major concern to practising managers. The parent's viewpoint gives results closer to the traditional meaning of net present value in capital budgeting.

Adjustment for Risk: Cash Flows versus Discount Rate Adjustment

Another important dimension in multinational capital budgeting is whether to adjust cash flows or the discount rate to account for the additional risk that arises from the foreign location of the project.

Traditionally, MNCs have adjusted the discount rate by moving it upwards for riskier projects to reflect the political and foreign exchange uncertainties. A significant number of firms that use the DCF technique in domestic projects also assign different hurdle rates for different projects, depending on their risk categories. Adjusting the discount rate is quite a popular method with MNCs mainly because of its simplicity and the rule that the required rate of return of a project should be in accordance with the degree of risk which it is exposed to.

However, combining all risks into a single discount rate has several drawbacks.

Example: The political risk and uncertainties attached to a project relate to possible adverse events that might occur in the distant future but cannot be foreseen at the present.

Adjusting the discount rate for political risk thus penalises early cash flows too heavily while not penalising distant cash flows enough. As far as the foreign exchange risk is concerned, adjusting the discount rate to offset the exchange risk is an oversimplification. This is so because only adverse exchange rate movements are expected whereas it is entirely possible for a MNC to many times gain from favourable overall currency movements during the life of the project.

The other alternative is to adjust cash flows rather than the discount rate in treating risk. The annual cash flows are discounted using the applicable rate for that type of project either at the host country or at the parent country. Probability and certainty equivalent techniques like decision tree analysis are used in economic and financial forecasting. Cash flows generated by the project and remitted to the parent during each time period are adjusted for political risk, exchange rate and other uncertainties by converting them into certainty equivalent. The method of adjusting the cash flows rather than the discount rate is generally the more popular method

Notes

and is usually recommended by finance managers. There is generally more information on the specific impact of a given risk on a project's cash flows than on its discount rate.

Financing Arrangement

In some cases, the governments of countries are willing to provide loans at subsidized rates so as to stimulate investment in specific sectors. The value of a project will then be determined by the manner in which it is financed. For example, many times, international agencies in order to promote cross border trade finance at below market rates. In the case of subsidized financing, it is important to determine, if the subsidized financing is separable or not from the project. When the subsidized financing is inseparable from the project, the value of the loan should be added to that of the project in making the investment decision. When subsidized financing is separable from the project, the additional value from the subsidized financing should not be allocated to the project.

Notes Financing costs are usually captured by the discount rate. However, when foreign projects are partially financed by foreign subsidiaries, a more accurate approach is to separate the subsidiary investment and explicitly consider foreign loan payments as cash outflows.

Blocked Funds

Blocked Funds are cash flows generate by a foreign project that cannot be immediately transferred to the parent, usually because of exchange controls imposed by the government of the country in which the funds are held. Some countries require that the earnings generated by the subsidiary be reinvested locally for at least a certain period of time before they can be remitted to the parent. Blocked funds cause a discrepancy between the project value from the parent's and local perspective. Also, this can possibly affect the accept/reject decision for a project.

Inflation

The impact of inflation on the parent's and subsidiary's cash flows can be quite volatile from year to year for some countries. It may cause the currency to weaken and hence influence a project's cash flows. Also, inaccurate inflation forecast by a country, can lead to inaccurate cash flow forecasts. Thus, MNCs cannot afford to ignore the impact of inflation on the cash flows.

Uncertain Salvage Value

The salvage value of a project has an important impact on the NPV of the project. When the salvage value is uncertain, the cash flows will not be accurate and the MNC may need to calculate various possible outcomes for the salvage value and estimate the NPV based on each possible outcome. The feasibility of the project may then depend upon the present value of the salvage value.

Self Assessment

Fill in the blanks:

1. Multinational firms investing abroad are exposed to foreign exchange …….
2. Where there are restrictions on the repatriation of income, substantial differences exist between project cash flows and cash flows received by the …… firm.

Notes

3. If the opportunity cost of the blocked funds is zero the entire amount released for the project should be considered as a reduction in the …… investment.
4. The cash flows that are remitted to the parent consist of both …… cash flows and financial cash flows.
5. Another important dimension in multinational capital budgeting is whether to adjust cash flows or the discount rate to account for the additional risk that arises from the …… location of the project.
6. …… are cash flows generate by a foreign project that cannot be immediately transferred to the parent, usually because of exchange controls imposed by the government of the country in which the funds are held.
7. If the blocked funds can be utilised in a foreign investment, the project cost to the investor may be …… the local project construction cost.
8. Accounting for blocked funds in the capital budgeting process depends on the …… cost of blocked funds.

13.2 Techniques of Capital Budgeting

The process of evaluating specific long-term investment decisions is known as the capital budgeting or capital expenditure decision. This decision is one of the critical decisions faced by the finance managers and is crucial to the success of a company. Companies devote significant time and effort in planning capital budgeting decisions because a company that makes a mistake in its capital budgeting process has to live with that mistake for a long time. Two popularly used discounted cash flow techniques of capital budgeting are the Net Present Value (NPV) and Internal Rate of Return (IRR).

Did u know? Both the techniques discount the project's cash flow at an appropriate discount rate. The results are then used to evaluate the projects based on the acceptance/rejection criteria developed by management.

13.2.1 Net Present Value

The NPV method explicitly recognizes the time value of money. Companies use the NPV method when they have to decide whether to continue with the existing equipment or buy new equipment that would increase production efficiency. The NPV method is important because it expresses in absolute terms the benefit of the project to the shareholders.

NPV is the most popular method and is defined as the present value of future cash flows discounted at an appropriate rate minus the initial net cash outlay for the projects. The discount rate used here is known as the cost of capital. The decision criteria is to accept projects with a positive NPV and reject projects which have a negative NPV.

To implement the NPV method you need:

1. To calculate the present value of the expected cash inflows and outflows discounted at the project's cost-of-capital rate.
2. To subtract the present value of the cash inflows from the present value of the initial net cash outflows to calculate the NPV of the project.
3. If the NPV of a project is positive, accept the project; if not reject the project.

Notes

The accept-reject criterion can be specified as:

NPV > 0—— > Finance manager accepts the investments

NPV < 0—— > Finance manager rejects the investments

NPV = 0—— >Finance manager is indifferent toward acceptance or rejection of the project

If the NPV of the project is greater than zero, the project should be accepted because the rate of return exceeds the required rate of return, the project's cost-of-capital rate, and this excess cash accrues solely to the company's stockholders. When the NPV of the project is equal to zero, the finance manager may or may not accept the project because the return is exactly equal to the required rate of return. If the NPV is less than zero, the project is rejected because the project earns a rate of return less than the required rate of return. If a company accepts a project with a positive NPV, the wealth of the stockholders improves.

Mathematically, NPV can be expressed as:

$$NPV = \sum_{t=1}^{n} \frac{CF_t}{(1+k)^t} - IO$$

Or $$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \ldots\ldots\ldots\ldots + \frac{CF_n}{(1+k)^n} - \text{Initial cash outlay}$$

Where:

CF_t = annual after tax cash flows in Period, t

k = the project's cost of capital

n = the project's expected life

IO = the initial cash outlay

t = time period

13.2.2 Internal Rate of Return

The IRR method is a discounted cash-flow technique. Similar to the NPV method, it takes into account the magnitude and timing of cash flows.

IRR is defined as the discount rate that equates the present value of expected future cash inflows with the present value of the project's initial cash outflows. Various empirical surveys have shown that companies prefer the IRR method because it is a relative measure of the projects worth.

Mathematically, IRR can be expressed as:

$$IO = \sum_{t=1}^{n} \frac{A_t}{(1+r)^t}$$

Where:

A_t = is the cash inflow flow at the end of year t

IO = the initial cash outlay

n = the project's expected life

r = the IRR of the project

t = the time period

Notes

In the IRR method, you calculate the discount rate to make the NPV of the project zero. This means that in the IRR method, you equalize the net cash proceeds over a project's life with the initial investment outlay. The IRR for a project is then compared with the hurdle rate, which is the company's market-determined required rate of return.

If the IRR exceeds the cost-of-capital rate the project is accepted, otherwise it is rejected. The IRR calculation is generally a trial-and-error exercise because the rate is unknown.

The accept-reject for the IRR criterion can be specified as:

If IRR > k Accept the project

If IRR < k Reject the project

If IRR = k Indifferent between acceptance and rejection of the proposal.

13.2.3 Adjusted Present Value Approach

A DCF technique that can be adapted to the unique aspect of evaluating foreign projects is the Adjusted Present Value (APV) approach. The APV format allows different components of the project's cash flow to be discounted separately. This allows the required flexibility, to be accommodated in the analysis of the foreign project. The APV approach uses different discount rates for different segments of the total cash flows depending upon the degree of certainty attached with each cash flow. In addition, the APV format helps the analyst to test the basic viability of the foreign project before accounting for all the complexities. If the project is acceptable in this scenario, no further evaluation based on accounting for other cash flows is done. If not, then an additional evaluation is done taking into account the other complexities. As mentioned earlier, foreign projects face a number of complexities not encountered in domestic capital budgeting, for example, the issue of remittance, foreign exchange regulation, lost exports, restriction on transfer of cash flows, blocked funds, etc.

Caution The APV model is a value additivity approach to capital budgeting, i.e., each cash flow as a source of value is considered individually.

Also, in the APV approach each cash flow is discounted at a rate of discount consistent with the risk inherent in that cash flow. Where

APV = Present value of investment outlay

+ Present value of operating cash flows

+Present value of interest tax shields

+Present value of interest subsidies

In equation form the APV approach can be written as:

$$APV = I_0 + \sum_{t=1}^{n} \frac{x_t}{(1+k^*)^t} + \sum_{t=1}^{n} \frac{T_t}{(1+i_d)^t} + \sum_{t=1}^{n} \frac{S_t}{(1+i_d)^t}$$

Where the term I_o = Present value of investment outlay

$\frac{x_t}{(1+k^*)^t}$ = Present value of operating cash flows

Notes

$$\frac{T_t}{(1+i_d)^t} = \text{Present value of interest tax shields}$$

$$\frac{S_t}{(1+i_d)^t} = \text{Present value of interest subsidies}$$

The various symbols denote

T_t = Tax savings in year t due to the financial mix adopted

S_t = Before-tax value of interest subsidies (on the home currency) in year t due to project specific financing

i_d = Before-tax cost of dollar debt (home currency)

The last two terms in the APV equation are discounted at the before-tax cost of dollar debt to reflect the relative certain value of the cash flows due to tax savings and interest savings.

The benefit of APV is that it breaks the problem down into the value of the project itself, as if it is totally equity financed and the value of the debt financing. This makes APV flexible enough to cover many different types of real-world financing arrangements such as: changes in tax rates every year, changes in amounts of debt every year, subsidy in interest payments for a certain number of years, flotation costs, etc. In each of these cases the NPV of the project if it were 100% equity financed would remain the same, and the value of the specific financing arrangement would simply be calculated separately.

Thus, APV focuses on two main categories of cash flows:

1. Real CFs (revenues)
2. Side effects associated with its financing programme (such as value of interest tax shields, subsidized financing)

   APV = NPV of project assuming it is all equity financed + NPV of financing side effects

Essentially, APV breaks the total value of the project into two parts: one part is the value assuming no debt is used, and then we add on the extra value created from using debt in the capital structure. There are four side effects of financing i.e. using debt in the capital structure:

- The Tax Subsidy to Debt
- The Costs of Issuing New Securities
- The Costs of Financial Distress
- Subsidies to Debt Financing

There are two steps in calculating an APV for a project:

Step 1: Calculate NPV for unlevered project (NPV)

Step 2: Calculate NPV of financing side (NPVF)

Step 3: Add up.

APV = NPV + NPVF

The unique features of the APV technique are:

- APV handles complexities with a lot of subsections.
- The APV format allows different components of the project's cash flow to be discounted separately depending upon the degree of certainty attached with each cash flow.

Notes

- This allows the required flexibility, to be accommodated in the analysis of the foreign project
- The APV model is a value additivity approach to capital budgeting, i.e., each cash flow as a source of value is considered individually.

Caselet

Effective Interest Rate

The Vodafone Corporation arranged a one-year, $1.5 million loan to fund a foreign project. The loan was denominated in Euros and carried a 10 percent nominal rate. The exchange rate at the time of the loan was .6799 euros per dollar but dropped to .6455 francs per dollar by the time the repayment came due. What effective interest rate did Vodafone end up paying on the foreign loan?

Solution:

Loan amount in $ = 1.5 million

Loan amount in Euros = 1.5 × 0.6799 million

Nominal rate = 10% = 0.1 × 1.5 × 0.6799 Euros

Effective interest rate = 0.1 × 1.5 × 0.6799/(0.6455 × 1.5) = 10.53%

Source: *International Financial Management*, Madhu Vij, Excel Books.

Task The Vodafone Corporation arranged a one-year, $1.5 million loan to fund a foreign project. The loan was denominated in Euros and carried a 10 percent nominal rate. The exchange rate at the time of the loan was .6799 euros per dollar but dropped to .6455 francs per dollar by the time the repayment came due. What effective interest rate did Vodafone end up paying on the foreign loan?

Self Assessment

Fill in the blanks:

9. The NPV method is important because it expresses in absolute terms the benefit of the project to the …… .
10. …… is defined as the present value of future cash flows discounted at an appropriate rate minus the initial net cash outlay for the projects.
11. When the NPV of the project is equal to …… , the finance manager may or may not accept the project.
12. The benefit of APV is that it breaks the problem down into the value of the project itself, as if it is totally …… financed and the value of the debt financing.
13. …… is defined as the discount rate that equates the present value of expected future cash inflows with the present value of the project's initial cash outflows.
14. If a company accepts a project with a …… NPV, the wealth of the stockholders improves.
15. The process of evaluating specific long-term investment decisions is known as the ……..

Notes

Case Study

Capital Budgeting

CEA is a leading Indian manufacturer of high quality sports goods and related equipment. The company is planning to increase its exports in the coming years. As a part of its strategy it is thinking of establishing a subsidiary in France that would manufacture and sell the goods locally. The management has asked the various departments of the company to supply all relevant information for a multinational capital budgeting analysis. The relevant information is given below.

Investment

The total initial investment to finance the plant and equipment is estimated at 20 million French Francs (FF) which will be invested by the parent. Working capital requirements, estimated at FF 10 million, will be borrowed by the subsidiary from a local financial institution at an interest rate of 8 per cent per annum. The principal will be paid at the end of the 5th year when the project is terminated while the interest payments are to be paid by the subsidiary annually.

Depreciation

The French government will allow the company to depreciate the plant and equipment using the straight-line method. The depreciation expense will be FF 4 million per year.

Project Life: The life of the project is expected to be 5 years.

Price and Sales: The forecasted price and sales schedules for the next five years are as given below:

Year	Price Per Unit	Sales in France
1	FF 600	50,000 units
2	FF 600	50,000 units
3	FF 650	80,000 units
4	FF 660	1,00,000 units
5	FF 680	1,20,000 units

Costs: The variable costs are FF 200/- per unit in year 1 and year 2, and are expected to rise to FF 250 for years 3, 4 and 5. The fixed costs (other than depreciation) are expected to be FF 1.5 million per year.

Exchange Rate

The spot exchange rate of the French Franc is ₹ 6.60. The forecasted exchange rate for all future period is ₹ 6.80.

Remittances

All profits after tax realised by the affiliate are transferable to the parent at the end of each year. The French government plans to impose no restrictions on remittance of cash flows but will impose a 5 per cent withholding tax on funds remitted by the subsidiary to the parent as mentioned earlier.

French government taxes on income earned by subsidiary: The Indian government will allow a tax credit on taxes paid in France so that earnings remitted by the parent will not be taxed by the French government.

Contd...

Notes

Required Rate of Return: The company requires a 10 per cent return on this project.

Advise the Indian Company regarding the financial viability of the proposal – should the project be set up in France or not?

Additional Considerations

1. ***Blocked Funds:*** Assume that all funds are blocked until the end of the fifth year. These funds can be reinvested locally to yield 6% annually after taxes. Show the calculations and comment on the result.
2. ***Exchange Rate Fluctuations:*** Assume the following exchange rate scenario and recalculate your results.

Alternative I

Year 1	Year 2	Year 3	Year 4	Year 5
6.80	6.90	6.95	7.00	7.05

Alternative II

Year 1	Year 2	Year 3	Year 4	Year 5
6.55	6.50	6.40	6.38	6.35

Question

How sensitive is the project to fluctuations in exchange rate? Comment.

Source: *International Financial Management*, Madhu Vij, Excel Books.

13.3 Summary

- Capital Budgeting for the multinational firm presents several complexities which are not there in domestic capital budgeting. Some of the important complexities are – parents cash flows are different from project cash flows, MNCs are exposed to foreign exchange risk, the two tax jurisdiction which the cash flows are subject to and the problems of blocked funds.
- When there are restrictions on the transfer of funds/cash flows to the parent then it becomes difficult to calculate the viability of the project. Project cash flows consist of profits and depreciation charges whereas parent's each flows consist of the amounts that can be legally transferred by the subsidiary.
- The important issue here is – from whose perspective should the project be evaluated? Both the subsidiary and parent's perspective is appropriate here as each project, should ultimately generate sufficient cash flows to the parent wealth and subsidiary.
- Evaluating and analysing cash flows from both viewpoints reveals important aspects about the project's competitiveness and its contribution to the company as a whole.
- The techniques employed in multinational capital budgeting include the NPV, IRR and APV format.
- The APV format is more suitable to the unique aspect of evaluating foreign project as it allows, different components of the projects cash flow to be discounted separately.
- The APV model is a value additivity approach to capital budgeting.

Notes

13.4 Keywords

APV Model: APV model is a value additivity approach to capital budgeting, i.e., each cash flow as a source of value is considered individually.

Blocked Funds: Blocked funds are cash flows generate by a foreign project that cannot be immediately transferred to the parent, usually because of exchange controls imposed by the government of the country in which the funds are held.

Capital Budgeting: The process in which a business determines whether projects such as building a new plant or investing in a long-term venture are worth pursuing.

DCF Techniques: DCF technique involves the use of the time-value of money principle to project evaluation.

Foreign Exchange Risk: The risk that the currency will appreciate or depreciate over a period of time.

IRR: IRR is defined as the discount rate that equates the present value of expected future cash inflows with the present value of the project's initial cash outflows.

NPV: NPV is the most popular method and is defined as the present value of future cash flows discounted at an appropriate rate minus the initial net cash outlay for the projects.

Payback Period: Payback period in capital budgeting refers to the period of time required for the return on an investment to "repay" the sum of the original investment.

13.5 Review Questions

1. Why should capital budgeting for subsidiary projects be assessed from the parent company's perspective? Give reasons.
2. What additional factors deserve consideration in multinational capital budgeting that are not normally relevant for a purely domestic project?
3. Why is capital budgeting analysis important to a firm?
4. Enumerate the various problems and issues in foreign investment analysis.
5. Describe the various methods of capital budgeting that are normally adopted by MNCs.
6. What are blocked finds? Elucidate with examples.
7. Describe the four main avenues by which cash flow returns to a parent are derived.
8. 'A foreign project normally is more beneficial to the parent when the foreign currency appreciates over the life of the project.' Elucidate with examples.
9. Examine the impact of exchange rate movements on cash flows to the parent/to the subsidiary.
10. Zerox Inc. is a MNC with businesses all over the world. It is considering a Euro 20 million expansion of their existing business line. The following details are provided: (i) The initial expense will be depreciated straight-line over 5 years to zero salvage value; the pretax salvage value in year 5 will be Euro 15,000. (ii) The project will generate pretax earnings of Euro 3,20,000 per year, and keep the risk level constant. (iii) The firm can raise a 5-year Euro 10,000,000 loan at 10.5% to partially finance. (iv) If the project were financed with all equity, the cost of capital would be 15%. The corporate tax rate is 40%, and the risk-free rate is 4%. (v) The project will require a Euro100,000 investment in net working capital.

Notes

(a) Calculate the APV.

(b) Would your answer be different if the firm can raise a 5-year Euro 10,000,000 loan at 13%.

Answers: Self Assessment

1.	Risk	2.	Parent
3.	Initial	4.	Operating
5.	Foreign	6.	Blocked Funds
7.	Below	8.	Opportunity
9.	Shareholders	10.	NPV
11.	Zero	12.	Equity
13.	IRR	14.	Positive
15.	Capital budgeting		

13.6 Further Readings

Books

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http://wps.prenhall.com/bp_eiteman_mbf_13/232/59437/15215903.cw/index.html

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Notes

Unit 14: Real Options and Cross-border Investments

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Objectives

After studying this unit, you will be able to:

- Explain the types of real options
- Discuss the valuation methods
- Explain foreign direct investments
- Discuss the methods to increase cross border investments

Introduction

Real options, sometimes also referred to as strategic options, are a tool that can be employed in capital budgeting analysis to help companies make better critical strategic decisions. As with financial market traded options, real options can be valued using pricing models. Real options give the holder the right but, importantly, not the obligation, to take a particular course of action. Real options are a mechanism by which a business can attempt to place an actual value on the choice of taking a particular option, and can play a valuable role in helping a company assess the financial implications of various strategic options. Real options are commonly used when dealing with the decision to initiate a new project or to abandon an existing project, depending

on how, over time, actual events have differed from the original forecast. Used in conjunction with discounted cash flow techniques, real options provide businesses with a model as to how a certain course of action is likely to impact the business. Without the inclusion of real options, conventional discounted cash flow techniques can provide an incomplete assessment of the viability of a project, as they ignore the option to change course during the life of the project, perhaps taking a charge to abandon, delay, downscale, or even upscale the project.

14.1 Types of Real Options

The flexibility available to management – i.e. the actual "real options" – generically, will relate to project size, project timing, and the operation of the project once established. In all cases, any (non-recoverable) upfront expenditure related to this flexibility is the option premium.

14.1.1 Options Relating to Project Size

Where the project's scope is uncertain, flexibility as to the size of the relevant facilities is valuable, and constitutes optionality.

- ***Option to Expand:*** Here the project is built with capacity in excess of the expected level of output so that it can produce at higher rate if needed. Management then has the option (but not the obligation) to expand – i.e. exercise the option – should conditions turn out to be favourable. A project with the option to expand will cost more to establish, the excess being the option premium, but is worth more than the same without the possibility of expansion. This is equivalent to a call option.
- ***Option to Contract:*** The project is engineered such that output can be contracted in future should conditions turn out to be unfavourable. Forgoing these future expenditures constitutes option exercise. This is the equivalent to a put option, and again, the excess upfront expenditure is the option premium.
- ***Option to Expand or Contract:*** Here the project is designed such that its operation can be dynamically turned on and off. Management may shut down part or all of the operation when conditions are unfavourable (a put option), and may restart operations when conditions improve (a call option). A Flexible Manufacturing System (FMS) is a good example of this type of option. This option is also known as a Switching option.

14.1.2 Options Relating to Project Life and Timing

Where there is uncertainty as to when, and how, business or other conditions will eventuate, flexibility as to the timing of the relevant project(s) is valuable, and constitutes optionality. Growth options are perhaps the most generic in this category – these entail the option to exercise only those projects that appear to be profitable at the time of initiation.

- ***Initiation or Deferment Options:*** Here management has flexibility as to when to start a project. For example, in natural resource exploration a firm can delay mining a deposit until market conditions are favorable. This constitutes an American styled call option.
- ***Option to Abandon:*** Management may have the option to cease a project during its life, and, possibly, to realise its salvage value. Here, when the present value of the remaining cash flows falls below the liquidation value, the asset may be sold, and this act is effectively the exercising of a put option. This option is also known as a Termination option. Abandonment options are American styled.
- ***Sequencing Options:*** This option is related to the initiation option above, although entails flexibility as to the timing of more than one interrelated projects: the analysis here is as to

Notes

whether it is advantageous to implement these sequentially or in parallel. Here, observing the outcomes relating to the first project, the firm can resolve some of the uncertainty relating to the venture overall. Once resolved, management has the option to proceed or not with the development of the other projects. If taken in parallel, management would have already spent the resources and the value of the option not to spend them is lost.

Caution The sequencing of projects is an important issue in corporate strategy. Related here is also the notion of Intraproject vs. Interproject options.

14.1.3 Options Relating to Project Operation

Management may have flexibility relating to the product produced and/or the process used in manufacture. This flexibility constitutes optionality.

- ***Output Mix Options:*** The option to produce different outputs from the same facility is known as an output mix option or product flexibility. These options are particularly valuable in industries where demand is volatile or where quantities demanded in total for a particular good are typically low, and management would wish to change to a different product quickly if required.
- ***Input Mix Options:*** An input mix option – process flexibility – allows management to use different inputs to produce the same output as appropriate. For example, a farmer will value the option to switch between various feed sources, preferring to use the cheapest acceptable alternative. An electric utility, for example, may have the option to switch between various fuel sources to produce electricity, and therefore a flexible plant, although more expensive may actually be more valuable.
- ***Operating Scale Options:*** Management may have the option to change the output rate per unit of time or to change the total length of production run time, for example in response to market conditions. These options are also known as Intensity options.

Self Assessment

Fill in the blanks:

1. In Option to …… management may have the option to cease a project during its life, and, possibly, to realise its salvage value.
2. …… options is related to the initiation option above, although entails flexibility as to the timing of more than one interrelated projects
3. Output …… options produce different outputs from the same facility is known as an output mix option or product flexibility.
4. An …… mix option process flexibility – allows management to use different inputs to produce the same output as appropriate.

14.2 Valuation

It is clear that there is an analogy between the modelling of real options and financial options. At the same time, it is nevertheless important to understand why the more standard valuation techniques may not be applicable for ROV.

Notes

14.2.1 Applicability of Standard Techniques

ROV is often contrasted with more standard techniques of capital budgeting, such as discounted cash flow (DCF) analysis/net present value (NPV). Under this "standard" NPV approach, future expected cash flows are present valued under the empirical probability measure at a discount rate that reflects the embedded risk in the project. Here, only the expected cash flows are considered, and the "flexibility" to alter corporate strategy in view of actual market realizations is "ignored". The NPV framework (implicitly) assumes that management is "passive" with regard to their Capital Investment once committed. Some analysts account for this uncertainty by adjusting the discount rate (e.g. by increasing the cost of capital) or the cash flows (using certainty equivalents, or applying (subjective) "haircuts" to the forecast numbers). Even when employed, however, these latter methods do not normally properly account for changes in risk over the project's lifecycle and hence fail to appropriately adapt the risk adjustment.

By contrast, ROV assumes that management is "active" and can "continuously" respond to market changes. Real options consider each and every scenario and indicate the best corporate action in any of these contingent events. Because management adapts to each negative outcome by decreasing its exposure and to positive scenarios by scaling up, the firm benefits from uncertainty in the underlying market, achieving a lower variability of profits than under the commitment/NPV stance. Here the approach, known as risk-neutral valuation, consists in adjusting the probability distribution for risk consideration, while discounting at the risk-free rate.

Did u know? This technique is also known as the certainty-equivalent or martingale approach, and uses a risk-neutral measure.

Given these different treatments, the real options value of a project is typically higher than the NPV – and the difference will be most marked in projects with major flexibility, contingency, and volatility. (As for financial options higher volatility of the underlying leads to higher value).

14.2.2 Options-based Valuation

Although there is much similarity between the modelling of real options and financial options, ROV is distinguished from the latter, in that it takes into account uncertainty about the future evolution of the parameters that determine the value of the project, *coupled with* management's ability to respond to the evolution of these parameters. It is the combined effect of these that makes ROV technically more challenging than its alternatives.

"First, you must figure out the full range of possible values for the underlying asset.... This involves estimating what the asset's value would be if it existed today and forecasting to see the full set of possible future values... [These] calculations provide you with numbers for all the possible future values of the option at the various points where a decision is needed on whether to continue with the project."

Notes When valuing the real option, the analyst must, therefore, consider the inputs to the valuation, the valuation method employed, and whether any technical limitations may apply.

Notes

14.2.3 Valuation Inputs

Given the similarity in valuation approach, the inputs required for modelling the real option correspond, generically, to those required for a financial option valuation. The specific application, though, is as follows:

The option's underlying is the project in question – it is modelled in terms of:

1. ***Spot Price:*** The starting or current value of the project is required: this is usually based on management's "best guess" as to the gross value of the project's cash flows and resultant NPV;
2. ***Volatility:*** Volatility uncertainty as to the change in value over time is required:
   - The volatility in project value is generally used, usually derived via monte carlo simulation; sometimes the volatility of the first period's cash flows are preferred;
   - Project NPV is often difficult to estimate, and some analysts therefore substitute a listed security as a proxy, using either the volatility of the price of the security (historical volatility), or, if options exist on this security, their implied volatility.

Option Characteristics

These are as follows:

1. ***Strike Price:*** This corresponds to any (non-recoverable) investment outlays, typically the prospective costs of the project. In general, management would proceed (i.e. the option would be in the money) given that the present value of expected cash flows exceeds this amount.
2. ***Option Term:*** The time during which management may decide to act, or not act, corresponds to the life of the option. As above, examples include the time to expiry of a patent, or of the mineral rights for a new mine.
3. ***Option Style and Option Exercise:*** Management's ability to respond to changes in value is modeled at each decision point as a series of options, as above these may comprise, i.e.:
   - The option to contract the project (an American styled put option);
   - The option to abandon the project (also an American put);
   - The option to expand or extend the project (both American styled call options);
   - Switching options, composite options or rainbow options which may also apply to the project.

14.2.4 Valuation Methods

The valuation methods usually employed, likewise, are adapted from techniques developed for valuing financial options. Note though that, in general, while most "real" problems allow for American style exercise at any point (many points) in the project's life and are impacted by multiple underlying variables, the standard methods are limited either with regard to dimensionality, to early exercise, or to both. In selecting a model, therefore, analysts must make a trade off between these considerations; The model must also be flexible enough to allow for the relevant decision rule to be coded appropriately at each decision point.

Notes

- Closed form, Black-Scholes-like solutions are sometimes employed. These are applicable only for European styled options or perpetual American options.
- The most commonly employed methods are binomial lattices. These are more widely used given that most real options are American styled. Additionally, and particularly, lattice-based models allow for flexibility as to exercise, where the relevant rules may be encoded at each node. Note that lattices cannot readily handle high-dimensional problems.
- Specialised Monte Carlo Methods have also been developed and are increasingly, and especially, applied to high dimensional problems. Note that for American styled real options, this application is somewhat more complex; although recent research combines a least squares approach with simulation, allowing for the valuation of real options which are both multidimensional and American styled.
- When the Real Option can be modelled using a partial differential equation, then Finite difference methods for option pricing are sometimes applied. Although many of the early ROV articles discussed this method, its use is relatively uncommon today—particularly amongst practitioners—due to the required mathematical sophistication; these too cannot readily be used for high dimensional problems.

Notes Various other methods, aimed mainly at practitioners, have been developed for real option valuation. These typically use cash-flow scenarios for the projection of the future pay-off distribution, and are not based on restricting assumptions similar to those that underlie the closed form (or even numeric) solutions discussed. The most recent additions include the Datar – Mathews method and the fuzzy pay-off method.

Self Assessment

Fill in the blanks:

5. The …… framework (implicitly) assumes that management is "passive" with regard to their Capital Investment once committed.
6. …… assumes that management is "active" and can "continuously" respond to market changes.
7. …… price corresponds to any (non-recoverable) investment outlays, typically the prospective costs of the project.
8. …… term is the time during which management may decide to act, or not act, corresponds to the life of the option.

14.3 Foreign Direct Investments

Foreign Direct Investment (FDI) is investment made by a transnational corporation to increase its international business. When firms become multinational, they undertake FDI. It generally involves the establishment of new production facilities in foreign countries to earn extra returns. The foreign investment decision results from a complex interaction of factors that differ in many ways from that governing the domestic investment decision. Foreign investment is generally motivated by a complex set of strategic, behavioural and economic and financial considerations.

Notes

The evaluation process of foreign investments is generally longer, more costly, less accurate and involves more political and foreign exchange risks. Businesses and governments are motivated to engage in FDI to (1) expand markets by selling abroad; and (2) acquire foreign resources (e.g., raw materials, knowledge, production efficiency, etc.). In addition, governments may also be motivated to gain political advantage.

The IMF defines foreign investment as FDI when the investor holds 10% or more of the equity of an enterprise. Foreign investment has been a major factor in stimulating economic growth and development in recent times. The contribution that multinational corporations can make as agents of growth, structural change and international integration has made FDI a coveted tool of economic development.

Did u know? Foreign Direct Investment (FDI) is one of the most important sources of capital. FDI links the host economy with the global markets and fosters economic growth.

14.3.1 Why do Firms Invest Abroad?

MNCs wanting to maximise shareholders' wealth generally try and increase their foreign business to become more internationalised. Some of the important reasons why firms decide to invest abroad are:

1. ***New Sources of Demand:*** In many situations growth is limited in the home country. This may either be due to intense competition or saturation in the share of the market. Thus, an alternative solution is to penetrate foreign markets where a potential demand exists.

2. ***Existence of Various Market Imperfections:*** Various empirical theories, such as that by Kindlerberger (1969) and Hymer (1975), have emphasized various market imperfections, that is imperfections in product, factor and capital markets as the key motivating forces drawing FDI.

   Countries differ with respect to resources available for the production of goods. However, if all resources could be easily transferred among countries, the volume of international business would be limited. If markets were perfect, all factors of production (except land) would be mobile and freely transferable. In the real world, markets are imperfect and factors of production are somewhat immobile. Thus, it is worthwhile for MNCs to survey markets to determine whether they can benefit from cheaper costs by producing in those markets. For example, Japanese companies are using Mexico and other low labour cost countries for production. Many organisations have also established subsidiaries in countries where production costs are low such as Mexico, Malaysia, Hong Kong and Taiwan.

   Foreign direct investment is specially high in Mexico due to the following reasons:

   - Production costs in Mexican plants are low;
   - Encouragement provided by the Mexican government to FDI under specific conditions; and
   - Mexican peso has been weak, allowing foreign firms to establish a plant at a low cost.

3. ***Economies of scale:*** MNCs may want to enter new markets to increase their earnings and to realise the full benefits of economics of scale. Companies in industries where the fixed costs are relatively large need to engage in volume selling to break even and these high volumes can only be realised if firms expand overseas.

Notes

4. ***Use Foreign Raw Material and Foreign Technology:*** Some corporations are increasingly establishing or acquiring existing overseas plants to learn about the technology of foreign countries. This technology can then be used by corporations to improve their production process at their various subsidiaries all over the world.

   In some cases when a corporation plans to sell a finished product in a foreign country, it may decide to develop the product in the country where the new materials are located. This will help the corporation in saving the transportation costs which it would have incurred in transporting the raw materials from a given country.

5. ***Exploit Monopolistic Advantage:*** In many situations, firms become Internationalised when they possess an advantage not available to competitive firms. Even within a given country some firms may possess an advantage over other firms in these markets. For example, if a firm possesses advanced technology and has exploited this advantage successfully in local markets it may attempt to exploit it internationally as well. The advanced technology is not restricted to developing a new product – it could also represent a more efficient production, marketing or financing process.

6. ***Diversify Internationally:*** When investors cannot effectively diversify their portfolio holdings internationally because of barriers to cross border capital flows, firms may help their shareholders with indirect diversification services by making direct investment in foreign countries. The firm's cash flows are internationally diversified when it holds assets in many countries. Thus, shareholders of the firm can indirectly benefit from international diversification even when they do not hold foreign shares. Capital market imperfections may thus motivate firms to undertake FDI.

7. ***Political Safety Seekers:*** Some MNCs attempt to expand their operations in countries that are unlikely to interfere with private enterprises and are considered politically stable. Also, MNCs based in politically unstable countries try to establish new operations and pursue other markets in which they may have greater flexibility to make business decisions.

8. ***Knowledge Seeking:*** Another important reason why firms decide to enter foreign markets is for the purpose of gaining information and experience that will be useful to them elsewhere. For example, in industries characterised by fast technological and product innovation it is important to collect information on foreign innovation and research and development systematically over a period of time. This information collected can then be used by the organisation in its own research and development, marketing and other areas.

Self Assessment

Fill in the blanks:

9. ..... is investment made by a transnational corporation to increase its international business.

10. The evaluation process of foreign investments is generally longer, more costly, less accurate and involves more ..... and foreign exchange risks.

11. Foreign Direct Investment (FDI) is one of the most important sources of .....

14.4 Methods to Increase Cross-border Investments

Direct Foreign Investment (DFI) is a common method of engaging in cross border investment. But this method is generally expensive and if, for some reason, the project fails, the firms face a

Notes

lot of difficulty in selling the plant. If a firm is confident that it will survive the foreign market and competition then DFI is the right way of investing abroad. However, there are several alternative methods of entering foreign markets that are less risky and also involve a smaller initial outlay than DFI.

The various alternatives are:

1. ***A Joint Venture:*** A viable form of increasing cross border investment is to engage in a joint venture. A joint venture between a multinational firm and a host country partner is a viable strategy if one finds the right local partner. For example, consider a firm in USA that has expertise in the technology to build automobiles and plans to establish business in West Germany. As this firm is not familiar with German rules and codes, it may consider a joint venture with a German firm. The two firms could then combine to establish a business in West Germany that would not have been possible by either individual firm.

   Joint ventures have become popular and some of the obvious advantages are as follows:

   (a) The local partner understands the customs, cultural restrictions and various institutions of the local environment. For the multinational firm to acquire a knowledge on its own, it might take a considerable period of time with a lot of problems attached to it.

   (b) The local partner can provide competent management both at the top and also at the middle level.

   (c) In some cases a 100% foreign ownership is not possible. Therefore, in such cases, host countries prefer that foreign firms share ownership with local firms or investors.

   (d) The contacts and reputation of the local partner may help the foreign firm in gaining access to the capital market.

   (e) If the purpose of the investment is to target local sales, the foreign firm may benefit substantially from a venture that is partially locally owned.

2. ***Mergers and Acquisitions/Cross-border Acquisitions:*** Firms are motivated to engage in cross border mergers and acquisitions to increase their competitive positions in the world market by acquiring special assets from other firms or using their own assets on a larger scale. FDI usually takes place through green field investments which involve building new production facilities in a foreign country or through cross border acquisitions which involve buying existing foreign business. Synergistic gains may or may not arise from cross border acquisitions depending on the motive of the acquiring firms. Gains will result when the acquired merger is motivated to take advantage of market imperfections.

   A cross border merger has the following advantages as against green field investment:

   (a) It is a cost effective way to capture advanced and valuable technology rather than developing it internally.

   (b) It is also an easy and quicker way to establish an operating presence in a host country.

   (c) Economies of scale and synergistic benefits can be achieved with a merger.

   (d) Foreign exchange exposure is reduced.

   As against the above mentioned advantages, a cross border merger may have the following problems:

   (a) Cultural differences may prevent the joining of two organisations of different customs, values and nationality.

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(b) Labour problems can arise because of favouritism, unequal union contracts, seniority and a host of other potential grievances.

(c) The price paid by the acquirer may be too high and the method of financing too costly.

Strategic alliances are currently very popular all over the world as a way of conducting international business. Such alliances are specially popular in areas where the cost of research and development is high and timely introduction of improvements is important. For example, consider the strategic alliance between Crisil and Standard and Poor. Both firms are in the credit rating industry. Both firms have retained their separate individual identity and the strategic alliance between the two mainly refers to sharing of knowledge, helping each other develop professionally in their areas of specialisation. Still another level of cooperation might involve joint marketing and servicing agreements where each partner represents the other in certain markets. This, in specific cases, helps to reduce competition.

3. ***Licensing:*** Licensing is a popular method used by MNCs to profit from foreign markets without the need to commit sizeable funds. Since the foreign producer is 100% locally owned, the political risk tends to get minimised.

In licensing, a local firm in the host country produces the goods to the licensing corporations' specifications. When the goods are sold, a portion of the revenues, as specified by the agreement, are sent to the licensor.

The main advantages of licensing are:

(a) Transportation costs are avoided as exporting is not required.

(b) Direct foreign investment is not required as a local firm handles production in the host country.

The disadvantages of licensing are:

(a) License fees are generally lower than direct investment profits although the return on the marginal investment might be higher.

(b) It is difficult to ensure quality control of the local firm's production process.

(c) The possibility of technology secrets provided to the local firm may leak out to competitive firms in that country. This may result in the establishment of a potential competitor in third country markets.

(d) Possibility of improvement of the technology by the local licensee which then enters the original firm's home market. This may result in a possible loss of opportunity to enter the licensee's market with a direct investment later on.

MNCs have not typically used licensing of independent firms. Most licensing arrangements have been with their own foreign affiliates or joint ventures. Licensing fees have been a way to spread the organisation's research and development costs among all operating units and a way of repatriating profits in a form which is generally more acceptable to some host countries than dividends.

4. ***Franchising:*** Another method of increasing cross border investment is through franchising. In franchising, the firm allows an individual to sell its product in a specific territory. The firm usually receives an initial fee plus periodic royalty payments in return. McDonald and Pizza Hut have franchises all over the world.

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Caselet

China's Capital Markets and Cross-border Investments

What is China's capital market situation now, and what will future investment opportunities in China look like? From a Chinese investor's perspective, what's the current situation in the U.S. market? These were among the questions discussed at the Cornell China Conference by a panel moderated by Johnson's George Gao, assistant professor of finance, Capital Markets and Cross-border Investments. The conference, held Oct. 27-28 and hosted by the Cornell Chinese Students and Scholars Association, was the first multidisciplinary conference focused on China held at Cornell. More than 40 speakers attended the conference.

Participants on the Capital Markets and Cross-border Investments panel addressed the issues from different perspectives. Panelists included: Huining Henry Cao, professor of finance and chair of the finance department at Cheung Kong Graduate School of Business; Ted Kamman, partner at Sidley Austin LLP; Shanquan Li, managing director and senior portfolio manager at Oppenheimer Funds; Barry M. Sine, CFA, CMT, managing director of equity research at Drexel Hamilton LLC; Ming Zhong, executive vice president at TCFA and senior portfolio manager at Lazard Asset Management; and Winston Ma, managing director at China Investment Corporation. Their discussion covered a wide range of topics, from global trends for cross-border investment to the Chinese government's regulation of private equity.

China Investment Corporation's Winston Ma observed that the cross-border investment structure is diversifying: "In the future, we will probably see more obstacles for takeover deals," he said. "Government may call for minority and early-stage investments."

Oppenheimer Funds' Shanquan Li noted that there are many strategies Chinese companies can employ when they invest abroad. He observed that most Chinese companies try to gain controlling interest as shareholders all at once. Instead, Li advised, those companies should gradually increase their shares and learn more about the companies during the process before they make the decision to become controlling shareholders.

Market regulations in China made for a hotly debated topic. Sidley Austin's Ted Kamman remarked: "There is too much regulation in the private equity market and too little regulation in capital markets. It needs to be reversed." Others said the regulations are gradually improving. Huining Cao of the Cheung Kong Graduate School of Business pointed out that the China Securities Regulation Commission now has a research institute, the Beijing Institute of Securities and Futures; the intent is to base regulations on solid research. Johnson's George Gao concluded that he believes China now understands how important research is, and that, hopefully, regulations based on research will provide more investment opportunities in China in the future.

Source: http://www.johnson.cornell.edu/About/News-Publications/Article-Detail/ArticleId/5065/China-s-Capital-Markets-and-Cross-border-Investments.aspx

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Task FDI has a direct impact on the growth and prosperity of any country. For India, even though the government has come up with a number of initiatives for the free flow of FDI, which include the opening up of insurance sector, raising the limit in banking sectors etc., the country has not been successful in getting the required amount of the foreign investments. India has witnessed modest capital flows during the first quarter of 2003, and the outlook remains gloomy. Is there a need for the regulators to focus on issues which can convert promises into performance?

Self Assessment

State whether the following statements are true or false:

12. In franchising, the firm allows an individual to sell its product in a specific territory.
13. In franchising, a local firm in the host country produces the goods to the licensing corporations' specifications.
14. Licensing between a multinational firm and a host country partner is a viable strategy if one finds the right local partner.
15. Direct Foreign Investment (DFI) is a common method of engaging in cross border investment.

Case Study

Foreign Investments

It is notable that the Asian crisis appears to have acted as a watershed in several of the key relationships affecting the FII flows to India. This is not an overly surprising result. Research has demonstrated that the Asian crisis caused several major changes in the financial relationship among European countries halfway across the globe. In fact, the crisis appeared to have altered several of the 'ground rules' of international portfolio investing around the world. Why exactly the relationships analysed here demonstrate a structural break at the outbreak of the Asian crisis is a matter of speculation. However, it is plausible that the crisis and India's relative imperviousness to it increased India's attractiveness to portfolio investors particularly as many other emerging markets began to appear extremely risky. This 'substitution effect', may well have drowned other long-term relationships. Besides, investors may have started paying closer attention to obtaining and processing information in destination countries in the wake of the Asian crisis causing an 'information effect' that could have altered the past relationship as well. Finally, behavioural changes among international portfolio investors following the crisis cannot be ruled out either.

Questions

1. It is being argued by researchers that the nature of FII flows to India has been significantly different before and after the Asian crisis. In this context, outline the nature and determinants of FII flows to India.
2. Discuss the motives for direct foreign investment by MNCs.
3. Do you think the Asian crisis altered several of the 'ground rules' of international portfolio investment around the world? Elucidate with example.

Source: *International Financial Management*, Madhu Vij, Excel Books.

Notes

14.5 Summary

- FDI represents one of the forms of international capital flow and is an investment which an investor places abroad in order to gain control over a company in which he is investing, Firms invest abroad as FDI is one of the most important factor in stimulating economic growth and development.
- The investment strategies and business views of MNCs are also important determinants of FDI in the country.
- Companies use various alternative methods of entering foreign markets. They are – Licensing, mergers and acquisitions, joint venture and franchising.
- Strategic alliance is currently a very popular method all over the world for conducting international business.
- In India, Mobilising FDI has been a major concern of economic reforms given the steady decline in the available of concessional debt flows globally and the spin off benefits that long-term foreign equity may bring to the Indian economy.
- It has been observed over a period of time that the foreign direct investors look for not only prospering and stabilised countries but also new markets that offer a possibility of high returns.
- Some of the most important factors which foreign investors take into consideration when entering a country are – stability of political and business environment, access to economic information, level of corruption, quality of infrastructure and the extent to which international standards are met.
- India will need to accelerate the reform process which was initiated by the government in 1991 and transform its weaknesses into strength. It will need to more clearly study and gain insights into the reform process of nations like US, UK and China. India can learn crucial lessons from the Chinese reforms process though the political environments of both countries are significantly different.

14.6 Keywords

Foreign Direct Investment (FDI): Foreign Direct Investment (FDI) is investment made by a transnational corporation to increase its international business.

Franchising: The firm allows an individual to sell its product in a specific territory.

Input Mix Options: An input mix option – process flexibility – allows management to use different inputs to produce the same output as appropriate.

Licensing: Licensing is a popular method used by MNCs to profit from foreign markets without the need to commit sizeable funds.

Option Term: The time during which management may decide to act, or not act, corresponds to the life of the option.

Real Options: Real options a tool that can be employed in capital budgeting analysis to help companies make better critical strategic decisions.

Sequencing Options: This option is related to the initiation option above, although entails flexibility as to the timing of more than one interrelated projects:

Strike Price: This corresponds to any (non-recoverable) investment outlays, typically the prospective costs of the project.

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14.7 Review Questions

1. Discuss the various methods which MNCs adopt to for their international business.
2. What are the advantages and disadvantages of joint ventures from the viewpoint of the:
   (a) MNC
   (b) Host country
3. Compare licensing to foreign investment from the viewpoint of the:
   (a) Host country
   (b) Multinational firm
   (c) Host country firm
4. Briefly discuss the global trends in FDI in the last five years and comment upon your results.
5. Briefly discuss the motives for increasing cross border investments by various corporations.
6. FDI inflows into India are around (3.4%) which is very low when compared other developing Asian economies like China (46.8%) and Hong Kong (22.8%). What policy measures do you think the regulatory authorities should initiate to attract more FDI inflows into the country?
7. In spite of a surplus in both the current account and capital account, India has been unable to attract global investors. Indian exports have been witnessing a constant decline when compared to other countries such as China and Hong Kong. What additional measures are required to tackle these problems?
8. "The successes and failure of programmes meant for attracting the FDI should be gauged by the size and rapidity with which the FDI flows in response to the initiative of the government. The other parameter that also measures the confidence of the investors is the demand of guarantees or any kind of payment security. If the investors are ensured and comfortable with the system, they do not ask for such mechanism." Comment.
9. Countries that attract FDI of large magnitudes do not treat money as a commodity. They regard FDI as an outcome of favourable perceptions. Elucidate.
10. "One of the interesting findings of a survey that compares FDI in India with the FDI in China is: Though China is attracting FDI more than India, and given the fact that China started the reform programme". Comment.

Answers: Self Assessment

1.	Abandon	2.	Sequencing
3.	Mix	4.	Input
5.	NPV	6.	ROV
7.	Strike	8.	Option
9.	Foreign Direct Investment (FDI)	10.	Political
11.	Capital	12.	True
13.	False	14.	False
15.	True		

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14.8 Further Readings

Books

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Online links

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http://www.iimb.ernet.in/publications/review/march2007/cross-border-emerging-markets

http://www.johnson.cornell.edu/About/News-Publications/Article-Detail/ArticleId/5065/China-s-Capital-Markets-and-Cross-border-Investments.aspx

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