

TOPIC 1: INTRODUCTION TO INTERNATIONAL FINANCE

Learning objectives

After reading this topic you should be able to:

- Understand the background of international finance
- Define international finance
- Explain the reason for studying international finance
- Explain the roles of international financial manager
- Understand the background of multinational corporations
- Distinguish between international finance and domestic finance

JOIN ME FOR EASY ACCESS TO EBOOKS & NOTES

+92-310-545-450-3

Css Aspirants ebooks & Notes
<https://m.facebook.com/groups/458184410965870>

Css Aspirants Forum
<http://t.me/CssAspirantsForum>

Rules of the group.

*No irrelevant text/pic/islamic pic/videos

*No Smiley No Pm otherwise Removed + Blocked

*Personal text w/o Mutual consent Consider harassment.

Separate Group For Females with verification

The CSS Group does not hold any rights on shared the Books & Notes

I,m not Responsible for Copyrights.

This book/notes downloaded from the internet.

1.1 BACKGROUND TO INTERNATIONAL FINANCE

International finance as a subject is not new in the area of financial management, it has been widely covered earlier in international economics and it is only the fast growth of international business in the post-world war II and the associated complexities in the international transactions that made the subject as an independent area of study.

For several centuries, international economists have used the classical economic theory of comparative advantage to explain the trade movements between nations. Looking at the writings of *Adam Smith* and *David Ricardo* in the eighteenth and nineteenth century, the theory in simple terms, states that everyone gains if each nation specializes in the production of those goods that it produces relatively most efficiently and imports those goods that other countries produces most relatively efficiently. The theory supported free trade arguments, such as the North American Free Trade Agreement (NAFTA)

The doctrine of comparative advantage made an initial assumption that although the products of economic activities could move internationally; the factors of production were relatively fixed in a geographical sense. Land, labor and capital were assumed internationally immobile.

The fast growing of the cross-border business transactions in the second half of the last twentieth century triggered the birth of multinational corporations, which is considered the most important phenomena in the economic development in that century.

This development, which holds such potential for the economic betterment of the world's population runs counter to the postulates of Smith and Ricardo in that, it is based on international mobility of the most important factors of production in the twentieth century.

- Capital raised in Tanzania by a South African- based corporation may finance acquisition of machinery by a subsidiary located in Botswana.

- A management team from Tanzania Breweries may take over a Zimbabwe brewery complex in Malawi.
- If money is the language of business, foreign exchange is the language of international business.

With growing operation of multinational corporations, a number of complexities arose in the area of their financial decisions. Apart from the considerations of where, when and how to invest, the decision concerning the management of working capital among their different subsidiaries and the parent units became more complex, especially because the basic policies varied from one MNC to another. Those MNCs that were more interested in maximizing the value of global wealth adopted a centralized approach while those not interfering much with their subsidiaries believed in a decentralized approach. Normally there is a mix of the two approaches in varying proportions, for which the study of international finance has come to be more relevant.

The second half of the twentieth century has also experienced a vast magnitude of lending by international and regional development banks (e.g. Citi bank, Barclays, African development Bank, Standard Chartered bank etc) and different governmental and non-governmental agencies. The movement of funds in form of interest and amortization payments needed proper management. Besides, there were big changes in the character of the international financial market with the emergence of euro banks and offshore banking centers and of various instruments, such as Euro bonds, euro notes and euro commercial papers. The nature of the movement of funds became so complex that proper management became a necessity and the study of international finance became highly of important.

1.2 DEFINITION OF INTERNATIONAL FINANCE.

International finance is the branch of economics that studies the dynamics of foreign exchange, foreign direct investment and how these affect international trade. Also studies the international projects, international investment and the international capital flow.

International Finance can be broadly defined, as the study of the financial decisions taken by a multinational corporation in the area of international business i.e. global corporate finance.

International finance draws much of its background from the preliminary studies in the topics of corporate finance such as capital budgeting, portfolio theory and cost of capital but now viewed in the international dimension.

1.3 REASONS TO STUDY INTERNATIONAL FINANCE

(i) To understand the global economy and its relation to:

-The end of the cold war

- The emergency of growing markets among the developing countries and
- The increasing globalization of the international economy

The great change of recent years has been the rapid industrialization and economic growth of countries in several parts of the world, such as Asia, Latin America and Africa. Another change in the international financial environment is increased globalization- national economies are becoming steadily more integrated.

(ii) To understand the effect of Global Finance on business

- Global finance has become increasingly important as it serves world trade and foreign investment.
- Most large and many medium –sized companies in the developed world have international business operations
- In recent years, it has become clear that international events significantly affect companies, which do not have foreign operations.

(iii) To make intelligent decisions

Although most personal decisions have nothing to do with international finance jobs, they all require significant knowledge of international finance to make intelligent decisions.

1.4 CLASSIFICATION OF INTERNATIONAL BUSINESS OPERATIONS

The international business firms are broadly divided into three categories:

(a) International Firm

The traditional activity of an international firm involves importing and exporting. Goods are produced in the domestic market and then exported to foreign buyers.

Financial management problems of this basic international trade activity focus on the payment process between the foreign buyer (seller) and domestic seller (buyer).

(b) Multinational firm

As international business expands, the firm needs to be closer to the consumer, closer to cheaper sources of inputs, or closer to other producers of the same product gain from their activities. It needs to produce abroad as well as sell abroad. As the domestic firm expands its operations across borders, incorporating activities in other countries, it is classified as a multinational.

Hence Multinational Corporation is a company engaged in producing and selling goods or services in more than one country. It ordinarily consists of a parent company located in the home country and at least five or six foreign subsidiaries, typically with a high degree of strategic interaction among the units.

(c) Transnational Firm

As the multinational firm expands its branches, affiliates, subsidiaries, and network of suppliers, consumers, distributors and all others, which fall under the firm umbrella of activities, the once traditional home country becomes less and less well defined.

Firms like Unilever, Phillips, Ford, and Sonny have become intricate network with home offices defined differently for products, processes, capitalization and even taxation.

1.5 PROBLEMS FACING MULTINATIONAL CORPORATIONS

Companies operating in several countries have greater control problems than those operating in only one because of the significantly increased complexity.

One problem that is immediately evident is language, but there are difficulties especially related to organization, planning and control systems and performance measurements.

Therefore, we examine the problems in the three given classifications above.

(a) Organization

- Most large organizations adopt a form of divisionalization or decentralization. Multinational operation adds in a further dimension that needs to be addressed. Operating units can be organized either within countries or across them.
- The balance of local control and central direction must be made. The management culture and quality in each country must be taken into account in determining the level of the autonomy allowed.
- The determination of the structure of operating unit needs to reflect the requirement for efficiency and also be tailored to the particular national environment. Factors such as legislation and taxation will impose differing demands from country to country.
- One common bugbear of international operation is the determinations of transfer prices for inter company trade. Several problems arise; tax planning, performance evaluation, goal congruence and currency fluctuations must all be factored into the method adopted.
- International operation will require adoption of an accounting system that satisfies the local and head office financial reporting standards. This can sometimes require maintaining two sets of books in each country, one for local reporting and other for consolidation into the group accounts.

(b) Planning

- Planning the operations of the company will be complicated by the need to consider the needs of the whole group as well as the particular circumstances country by country. The exercise may produce conflicting demands that could cause tensions within the group.
- Central management will need to have a full understanding of the situation in several countries. The planning process will require gathering and assimilating information from all the company's locations, which may be a complicated exercise.
- Any plans set by local management must be reviewed by for congruence with the company's overall aims. As with any decentralized operation with a degree of divisional autonomy there is potential for conflict between the aims of local and central management.

1.6 FUNCTIONS OF FINANCIAL MANAGER.

In a world which change is the rule and not the exception, the key to international competitiveness is the ability of management to adjust to change and volatility at an ever-faster rate.

Financial management is traditionally separated into two basic functions: the acquisition of funds and the investment of these funds. The first function, also known as the financing decision, involves generating funds from internal sources or from sources external to the firm at the lowest long-run cost possible. The investment decision is concerned with the allocation of funds over time in such a way that shareholder wealth is maximized. Therefore the main functions of the financial manager are: making financing decisions and investing decisions and eventually returning the funds to the providers of such funds (shareholders) on international perspective.

1.7 INTERNATIONAL FINANCE VERSUS DOMESTIC FINANCE

International finance is to a great extent, similar to domestic corporate finance. A domestic company takes up a project for investment only when the net present value of cash flows is positive and it shapes the working capital policy in a way that maximizes profitability and ensures desired liquidity. It is not different in case of MNCs. Again, the financing decisions, in respect of whether a domestic or an international company, aim at minimizing the overall cost of capital and providing optimum liquidity.

Domestic financial management is concerned with the costs of financing sources and the payoffs from investment. In domestic arena, movements in exchange rates are substantially ignored. But when we move outside of this purely domestic field, there is no way that we can analyze international financing and investment opportunities without an understanding of the impact of foreign exchange rates upon the basic model of financial management.

We still concerned with raising funds at minimum cost, but there is clearly a complication of analyzing if United Republic of Tanzania-based Company is raising funds by way of a Swiss franc borrowing. We are still concerned with investment opportunities chosen to create maximum shareholder value, but what if the income and cash flow of our URT-based company's investment arise from South Africa in Rands or, from Mexico in pesos. Moreover, what if exchange controls place barriers on remittances of some proportion of profit.

However, international finance has a wider scope than domestic corporate finance and it is designed to cope with greater range of complexities than the domestic finance.

The reasons are as follows:-

- (a) The MNCs operate in different economic, political, legal, cultural and tax environments
- (b) They operate across and within varied ranges of product and factor markets which vary in regard to competition and efficiency.
- (c) They trade in a large number of currencies as a result of which their dependence on the foreign exchange market is quite substantial.
- (d) They have easy access not only to varying domestic capital markets but also to unregulated international capital markets which differ in terms of efficiency and competitiveness.

The greater the degree of involvement of the firm in the international economic environment or the greater the degree of differences among different segments of the international economic environment, the greater are the complexities. Basically, when MNCs make international investments, they also need to consider the political relations between the host government and home government.

The capital budgeting technique also considers the intra-firm flows. A domestic firm does not have to bother with these complexities.

Moreover, working capital management for an MNC is more complex because it involves cash movement and movement of raw materials and finished goods from one political and tax jurisdiction to another.

Obviously multinational finance possesses a dimension that makes it far more complicated than domestic financial management. Indeed, multinational finance is a complex area of study compared to domestic finance.

REVIEW QUESTIONS

1. Name some of the complexities of international finance compared to domestic finance.
2. How has the growth in international trade and multinational corporations been responsible for growing importance of the study of international finance?
3. Discuss the nature and scope of international financial management.
4. Critically distinguish between international finance and domestic finance

TOPIC 2: THE INTERNATIONAL MONETARY SYSTEM (IMS)

2.1: AN OVERVIEW OF THE EVOLUTION OF MODERN INTERNATIONAL MONETARY SYSTEM

MNCs operate in a global market, buying/selling/producing in many different countries. For example, GM sells cars in 150 countries, produces cars in 50 countries, so it has to deal with hundreds of currencies.

The international monetary system which prevails today has evolved over a period of more than 150 years. In the process of evolution, several monetary systems came into existence, which either collapsed due to their inherent weakness or were modified to cope with the changing international economic order.

International Monetary System - Institutional framework within which:

1. International payments are made
2. Movements of capital are accommodated
3. Ex-rates are determined

An international monetary system is required to facilitate international trade, business, travel, investment, foreign aid, etc. For domestic economy, we would study Money and Banking to understand the domestic institutional framework of money, monetary policy, central banking, commercial banking, check-clearing, etc. To understand the flow of international capital/currency we study the IMS. IMS - complex system of international arrangements, rules, institutions, policies in regard to ex-rates, international payments, capital flows. IMS has evolved over time as international trade, finance, and business have changed, as technology has improved, as political dynamics change, etc. Example: evolution of the European Union and the Euro currency impacts the IMS.

Simply, the international monetary system refers primarily to the set of policies, institutions, practices, regulations and mechanisms that determine the rate at which one currency is exchanged for another.

2.1.1 : BIMETALLISM (pre-1875)

Commodity money system using both silver and gold (precious metals) for int'l payments (and for domestic currency). Why silver and gold? (Intrinsic Value, Portable, Recognizable, Homogenous/Divisible, Durable/Non-perishable). Why two metals and not one (silver standard or gold standard vs. bimetallism)? Some countries' currencies in certain periods were on either the gold standard (British pound) or the silver standard (German DM) and some on a bimetallic (French franc). Pound/Franc exchange rate was determined by the gold content of the two currencies. Franc/DM was determined by the silver content of the two currencies. Pound (gold) / DM (silver) rate was determined by their exchange rates against the Franc.

Under a bimetallic standard (or any time when more than one type of currency is acceptable for payment), countries would experience "**Gresham's Law**" which is when "bad" money drives out "good" money.

The more desirable, superior form of money is hoarded and withdrawn from circulation, and people use the inferior or bad money to make payments. The bad money circulates, the good money is hoarded. Under a bimetallic standard the silver/gold ratio was fixed at a legal rate. When the market rate for silver/gold differed substantially from the legal rate, one metal would be overvalued and one would be undervalued. People would circulate the undervalued (bad) money and hoard the overvalued (good) money.

Examples: a) From 1837-1860 the legal silver/gold ratio was 16/1 and the market ratio was 15.5/1. One oz of gold would trade for 15.5 oz. of silver in the market, but one oz of gold would trade for 16 oz of silver at the legal/official rate. Gold was overvalued at the legal rate, silver was undervalued. Gold circulated and silver was hoarded (or not minted into coins), putting the US on what was effectively a gold standard.

b) Later on, France went from a bimetallic standard to effectively a gold standard after the discovery of gold in US and Australia in the 1800s. The fixed legal ratio was out of line with the true market rate. Gold became more abundant, lowering its scarcity/value, silver became more valuable. Only gold circulated as a medium of exchange.

2.1.2 : THE CLASSICAL GOLD STANDARD (1875-WWI).

For about 40 years most of the world was on an international gold standard, ended with First World War (WWI) when most countries went off gold standard. London was the financial center of the world, most advanced economy with the most international trade.

Classical Gold Standard is a monetary system in which a country's government allows its currency unit to be freely converted into fixed amounts of gold and vice versa. The exchange rate under the gold standard monetary system is determined by the economic difference for an ounce of gold between two currencies. The gold standard was mainly used from 1875 to 1914 and also during the interwar years.

Gold Standard exists when most countries:

1. Use gold coins as the primary medium of exchange.
2. Have a fixed ex-rate between ounce of gold and currency.
3. Allow unrestricted gold flows - gold can be exported/imported freely.
4. Banknotes had to be backed with gold to assure full convertibility to gold.
5. Domestic money stock had to rise and fall with gold flows

The creation of the gold standard monetary system in 1875 marks one of the most important events in the history of the foreign exchange market. Before the gold standard was implemented,

countries would commonly use gold and silver as means of international payment as explained earlier. The main issue with using gold and silver for payment is that their value is affected by external supply and demand. For example, the discovery of a new gold mine would drive gold prices down.

The underlying idea behind the gold standard was that governments guaranteed the conversion of currency into a specific amount of gold, and vice versa. In other words, a currency would be backed by gold. Obviously, governments needed a fairly substantial gold reserve in order to meet the demand for exchanges. During the late nineteenth century, all of the major economic countries had defined an amount of currency to an ounce of gold. Over time, the difference in price of an ounce of gold between two currencies became the exchange rate for those two currencies. The use of the gold standard would mark the first use of formalized exchange rates in history. However, the system was flawed because countries needed to hold large gold reserves in order to keep up with the volatile nature of supply and demand for currency.

Under a gold standard, exchange rates would be kept in line by cross-country gold flows. Any mis-alignment of ex-rates would be corrected by gold flows. Payments could in effect be made by either gold or banknotes. If market exchange rates ever deviated from the official ex-rate, it would be cheaper to pay in gold than in banknotes.

The gold standard eventually broke down during the beginning of World War I. Due to the political tension with Germany; the major European powers felt a need to complete large military projects. The financial burden of these projects was so substantial that there was not enough gold at the time to exchange for all the excess currency that the governments were printing-off.

Although the gold standard would make a small comeback during the inter-war years, most countries had dropped it again by the onset of World War II. However, gold never ceased being the ultimate form of monetary value.

Advantages of Gold Standard

1. Ultimate hedge against inflation. Because of its fixed supply, gold standard creates price level stability, eliminates abuse by central bank/hyperinflation.
2. Automatic adjustment in Balance of Payments due to price-specie-flow mechanism

Disadvantages of Gold Standard

1. Possible deflationary pressure. With a fixed supply of gold (fixed money supply), output growth would lead to deflation.
2. An international gold standard has no commitment mechanism, or enforcement mechanism, to keep countries on the gold standard if they decide to abandon gold.

INTERWAR PERIOD: 1915-1944

When WWI started, countries abandoned the gold standard, suspended redemption of banknotes for gold, and imposed embargoes on gold exports (no gold could leave the country). After the war, hyperinflationary finance followed in many countries such as Germany, Austria, Hungary, Poland, etc. Price level increased in Germany by 1 trillion times!! Why hyperinflation then? What are the costs of inflation??

US (1919), UK(1925), Switzerland, France returned to the gold standard during the 1920s. However, most central banks engaged in a process called "sterilization" where they would counteract and neutralize the price-specie-flow adjustment mechanism. Central banks would match inflows of gold with reductions in the domestic MS, and outflows of gold with increases in MS, so that the domestic price level wouldn't change. Adjustment mechanism would not be allowed to work. If the US had a trade surplus, there would be a gold inflow which should have increased US prices, making US less competitive. Sterilization would involve contractionary monetary policy to offset the gold inflow.

In the 1930s, what was left of the gold standard faded - countries started abandoning the gold standard, mostly because of the Great Depression, bank failures, stock market crashes. Started in US, spread to the rest of the world. Also, escalating protectionism (trade wars) brought int'l trade to a standstill. (Smoot-Hawley Act in 1930), slowing int'l gold flows. US went off gold in 1933, France lasted until 1936.

Between WWI and WWII, the gold standard never really worked, it never received the full commitment of countries. Also, it was period of political instability, the Great Depressions, etc. So there really was no stable, coherent IMS, with adverse effects on int'l trade, finance and investment.

2.1.3 : The Bretton Woods System 1944 – 1971

After World War II, a modified version of the gold standard monetary system, the Bretton Woods monetary system, was created as its successor. This successor system was initially successful, but because it also depended heavily on gold reserves, it was abandoned in 1971 when U.S president Nixon "closed the gold window"

Before the end of World War II, the Allied nations believed that there would be a need to set up a monetary system in order to fill the void that was left behind when the gold standard system was abandoned. In July 1944, more than 700 representatives from the Allies convened at Bretton Woods, New Hampshire, to deliberate over what would be called the [Bretton Woods System](#) of international monetary management. . The International Monetary Fund (IMF) and the World Bank were created as part of a comprehensive plan to start a new IMS. The IMF was to

MUHAMMAD MUSTAFA

MBA FROM UOS

supervise the rules and policies of a new fixed exchange rate regime, promote foreign trade and

Mega Lecture

to maintain the monetary stability of countries and therefore that of the global economy; the World Bank was responsible for financing development projects for developing countries (power plants, roads, infrastructure investments).

It was agreed that currencies would once again be fixed, or pegged, but this time to the U.S. dollar, which in turn was pegged to gold at USD 35/ounce. What this meant was that the value of a currency was directly linked with the value of the U.S. dollar. So if you needed to buy Japanese yen, the value of the yen would be expressed in U.S. dollars, whose value in turn was determined in the value of gold. If a country needed to readjust the value of its currency, it could approach the IMF to adjust the pegged value of its currency. The peg was maintained until 1971, when the U.S. dollar could no longer hold the value of the pegged rate of USD 35/ounce of gold.

From then on, major governments adopted a floating system, and all attempts to move back to a global peg were eventually abandoned in 1985. Since then, no major economies have gone back to a peg, and the use of gold as a peg has been completely abandoned.

To simplify, Bretton Woods led to the formation of the following:

- A method of fixed exchange rates;
- The U.S. dollar replacing the gold standard to become a primary reserve currency; and
- The creation of three international agencies to oversee economic activity: the [International Monetary Fund](#) (IMF), International Bank for Reconstruction and Development, and the General Agreement on Tariffs and Trade (GATT)

The main features of the system were: -

One of the main features of Bretton Woods is that the U.S. dollar replaced gold as the main standard of convertibility for the world's currencies; and furthermore, the U.S. dollar became the only currency that would be backed by gold. (This turned out to be the primary reason that Bretton Woods eventually failed.)

(i) A system of fixed exchange rates on the adjustable peg system was established. Exchange rates were fixed against gold but since there were fixed dollars of gold (35 per ounce) the fixed rates were expressed relative to the dollar. Between 1949 and 1967 sterling was pegged at 2.80. Governments were obliged to intervene in foreign exchange markets to keep the actual rate within 1% of the pegged rate.

(ii) Governments were permitted by IMF rules to alter the pegged rate – in effect to devalue or revalue the currency but only if the country was experiencing a balance of payments deficit/surplus of a fundamental nature.

(iii) The dollar became the principal international reserve asset. Only the USA undertook to convert their currency into gold if required. In the 1950's the held the largest gold stocks in the world. Thus the dollar became "as good as gold" and countries were willing to use the dollar as

their principal. Initially the Bretton Woods system appeared to work well. World trade grew at record rates in the 1950's and the world experienced what has since been described as the "golden age of capitalism". However in 1971 the system collapsed, clearly there were problems that had developed over the previous two decades.

Why Peg?

The reasons to peg a currency are linked to stability. Especially in today's developing nations, a country may decide to peg its currency to create a stable atmosphere for foreign investment. With a peg the investor will always know what his/her investment value is, and therefore will not have to worry about daily fluctuations. A pegged currency can also help to lower inflation rates and generate demand, which results from greater confidence in the stability of the currency.

Fixed regimes, however, can often lead to severe financial crises since a peg is difficult to maintain in the long run. This was seen in the Mexican (1995), Asian and Russian (1997) financial crises: an attempt to maintain a high value of the local currency to the peg resulted in the currencies eventually becoming overvalued. This meant that the governments could no longer meet the demands to convert the local currency into the foreign currency at the pegged rate. With speculation and panic, investors scrambled to get out their money and convert it into foreign currency before the local currency was devalued against the peg; foreign reserve supplies eventually became depleted. In Mexico's case, the government was forced to devalue the peso by 30%. In Thailand, the government eventually had to allow the currency to float, and by the end of 1997, the bhat had lost its value by 50% as the market's demand and supply readjusted the value of the local currency.

Countries with pegs are often associated with having unsophisticated capital markets and weak regulating institutions. The peg is therefore there to help create stability in such an environment. It takes a stronger system as well as a mature market to maintain a float. When a country is forced to devalue its currency, it is also required to proceed with some form of economic reform, like implementing greater transparency, in an effort to strengthen its financial institutions.

Some governments may choose to have a "floating," or "crawling" peg, whereby the government reassesses the value of the peg periodically and then changes the peg rate accordingly. Usually the change is devaluation, but one that is controlled so that market panic is avoided. This method is often used in the transition from a peg to a floating regime, and it allows the government to "save face" by not being forced to devalue in an uncontrollable crisis

Although the peg has worked in creating global trade and monetary stability, it was used only at a time when all the major economies were a part of it. And while a floating regime is not without its flaws, it has proven to be a more efficient means of determining the long-term value of a currency and creating equilibrium in the international market

The collapse of the Bretton woods system:

Over the next 25 or so years, the U.S. had to run a series of balance of payment deficits in order to be the world's reserved currency. By the early 1970s, U.S. gold reserves were so depleted that the U.S. treasury did not have enough gold to cover all the U.S. dollars that foreign central banks had in reserve.

Finally, on August 15, 1971, U.S. President Richard Nixon closed the gold window, and the U.S. announced to the world that it would no longer exchange gold for the U.S. dollars that were held in foreign reserves. This event marked the end of Bretton Woods and most countries moved to some system of floating exchange rates.

What caused the collapse of the system?

(a) The system relied on period revaluations/devaluations to ensure that exchange rates did not move too far out of line with underlining competitive. However countries were reluctant to alter their pegged exchange rates.

- Surplus countries were under no pressure to revalue since the accumulation of foreign exchange reserves posed no real economic problems.
- Deficit countries regarded devaluation as an indicator of the failure of economic policy. The UK resisted devaluation until 1967 – long after it had become dearly necessary.

Thus the deficit countries were forced into deflationary policy to protect overvalued exchange rates. As Inflation rates accelerated and diverged the problem became more serious and countries became less willing to accept the deflationary price of a fixed exchange rate system.

(b) The system became vulnerable to speculation since speculation was a “one way bet”. A deficit country might devalue or not. Thus pressure grew on deficit countries especially as capital flows increased with the development of the Eurocurrency markets.

(c) The system had an inherent flaw. The system had adopted the dollar as the principal reserve currency. As world trade expanded more dollars would be needed to provide sufficient internationally liquid assets to finance that trade. A steady supply of dollars to the world required that the USA ran a balance of payment deficit and financed it by exporting dollars. But eventually the world held more dollars than the value of the USA's holdings of gold. The ability to convert dollars into gold was called in doubt. Thus confidence in the dollar declined.

With the collapse of Bretton woods, most countries moved to floating exchange rates of one sort or another. This was not so much a positive choice by governments as recognition of the inability to maintain the previous system. Attempts were made to restore a fixed rate system but these failed.

It was soon recognized that a return to fixed exchange rates not likely in the immediate future and steps were taken to formalize the new system, the most important outcome of which was an agreement that:-

Countries could fix currencies against any measure except gold.

- Floating exchange rates were accepted and IMF members were only required to maintain “orderly exchange arrangements and” stable systems of exchange rates.

G – 7 Council

The governments of the five major industrial economies met in the USA in 1985 to consider the implications of what was considered to be the serious over valuation of the US. It was considered that such major misalignments of currencies were damaging to the growth of International trade. The result was an exercise in international policy Co – Ordination.

All five countries agreed to undertake policies to engineer a steady fall in the exchange value of the dollar. This was broadly successful. Following the apparent success of this co – operation the G – 7 groups of countries (USA, German, Japan, France, UK, Canada and Italy) attempted to go further. Having considered that exchange rates were now “about right: the G 7 group agreed to maintain management of their exchange rates in order to generate stability in exchange rates. This involved: -

- a. Intervention in the foreign exchange markets to prevent serious short-term fluctuations in the exchange rate. This was to be done on a large scale and in a co – ordinate fashion.
- b. Co – ordination overall fiscal and monetary policy in order to produce long-term stability in exchange rates. The level of interest rates and the control of inflation would be central to this and to short-term management of the exchange rate.

The European Monetary System

After the collapse of the Bretton woods systems, several European countries started to move towards a system in which there was increasing stability between their national currencies, even though there might still be volatility in their exchange rates with currencies of non – member states. This objective was eventually incorporated into the European monetary system (EMS) of the European Union.

The EMS was established in 1979. As part of this system, there was an exchange rate mechanism for achieving stability in the exchange rates of member currencies, by restricting exchange rate movements within certain limits or “bands”

The objectives of the EMS were: -

- Exchange rate stability:- Members agreed to stabilize exchange rates within the narrow bands of the exchange Rate Mechanism (ERM).

The main features of the ERM were: -

1. Each country had a central rate in the system expressed in terms of a composite currency, the European currency unit (ECU)
 2. Currencies were only allowed to fluctuate within specified bands
 3. Within these there were narrower limits, measured in ECU and acting as trigger for policy action by governments to limit further exchange rate movement.
- To promote convergence – in economic performance in member states especially in terms of inflation rates, interest rates and public borrowing. This is seen as necessary step in the move to a single currency.
 - A long-term aim of achieving a single European currency as part of a wider economic and monetary Union.

The first stage was to establish the ECU. This was the central currency of the EMS and was a composite currency whose value was determined by a weighted basket of European currencies. Use of the ECU was largely restricted to official transactions.

The central feature of the EMS the operation of the exchange rate mechanism and the experience of the UK illustrates the difficulties of achieving exchange rate stability within Europe.

THE EURO

The EU's new single currency, the euro, was duly launched on 1st January 1999. 11 of the 15 EU countries agreed to participate and Greece subsequently joined as a 12th member. Three countries (Denmark, Sweden and the UK) decided not to join. The euro and the national currencies existed side-by-side for all countries in the euro-zone. Exchange rates for each national currency were irrevocably locked in terms of euros.

The existing national currencies (such as the French franc and Dutch mark) continued in circulation until 1st January 2002, when they were replaced by euro notes and coins. The euro-zone is comparable in size to the US and the euro has become one of the world's major currencies.

Main Advantages of Euro (€):

1. Significant reduction in transaction costs for consumers, businesses, governments, etc. (estimated to be .4% of European GDP, about \$50B!)
European Saying: If you travel through all 15 countries and exchange money in each country but don't spend it, you end up with 1/2 of the original amount!
2. Elimination of currency risk, which will save companies hedging costs.
3. Promote corporate restructuring via M&A activity (mergers and acquisitions), encourage optimal business location decisions.

Main Disadvantage of Euro:

Loss of control over domestic monetary policy and exchange rate determination.

Suppose that the Finnish economy is not well-diversified, and is dependent on exports of paper/pulp products, it might be prone to "asymmetric shocks" to its economy. If there is a sudden drop in world paper/pulp prices, the Finnish economy could go into recession, unemployment could increase. If independent, Finland could use monetary stimulus to lower interest rates and lower the value of its currency, to stimulate the domestic economy and increase exports. As part of EU, Finland no longer has those options, it is under the EU Central Bank, which will probably not adjust policy for the Eurozone to accommodate Finland's recession. Finland may have a prolonged recession. There are also limits to the degree of fiscal stimulus through tax cuts, since budget deficits cannot exceed 3% of GDP, a requirement to maintain membership in EMU (to discourage irresponsible fiscal behavior).

The European Central bank (ECB)

The ECB began operations in May 1998 as the single body with the power to issue currency, draft monetary policy and set interest rates in the euro-zone. It is based in Frankfurt and it is a sole issuer of the euro.

Strategic implications of Economic and Monetary Union and the euro

For the member countries, Economic and Monetary Union (EMU) has created a single currency, **the euro**, with a single interest rate and single monetary policy. The benefits of EMU membership have included:-

- The elimination of foreign exchange risk from dealings in the form national currencies of the euro-zone countries
- Larger and more competitive capital markets
- Greater transparency of competition within the euro-zone.

2.1.4 : EXCHANGE RATE REGIME

It is generally accepted that in the larger term, exchange rates are affected by differences in rates of inflation and rates of interest.

In addition, exchange rates can be subject to management by the central government or central Bank. Certainly, a government should have a policy towards its exchange rate, even if it is just a policy of begging neglect “(which means letting the currency find its value through market forces of supply and demand in the foreign exchange markets)”

There are various exchange rate systems that countries might adopt. The two broad alternatives are: -

1. Fixed exchange rate system
2. Floating exchange systems.

Fixed Exchange Rate Systems:

Under a fixed exchange rate system the government and the monetary authorities would have to operate in the foreign exchange market to ensure that the market rate of exchange is kept at its fixed (par) rate.

However, under this system, there are distinctions as to the form in which reserves are held and the degree of fixity in the exchange rate: -

- A government (through central banks) would have to maintain official reserves.

The reserves are required for: -

- Financing any current account deficit (fall in reserve) or surplus (rise in reserves) that occur.
- Intervening in the foreign exchange market to maintain the par value of the currency. The currency would be bought with reserves if the exchange rate fell and sold in exchange for reserves when the exchange rate rose.

The reserves may take different forms: -

1. Gold, as under the gold standard system that operated prior to 1914.
2. Dollars, as under the Breton woods system 1945 – 1971
3. A basket of major currencies.

No exchange rate system is truly fixed for all time. The issue is the degree of fixity: -

- Under the gold standard system it was held that, for all practical purposes, the rates of exchange were fixed.
- Under the Breton woods system, exchange rates were fixed within narrow limits but with the possibility of occasional changes of the par value (an adjustment peg system).

A fixed exchange rate system has a variety of advantages and disadvantages.

Advantages

- (i) It provides stability in the foreign exchange markets and certainty about the future course of exchange rate and it eliminates risks caused by uncertainty, hence encouraging international trade.
- (ii) Creates conditions for smooth flow international capital. Simply because it ensures a certain return on the foreign investment.
- (iii) It eliminates the possibility of speculation, where by it removes the dangers of speculative activities in the foreign exchange market.
- (iv) Reduces the possibility of competitive depreciation of currencies, as it happened during the 1930.

Disadvantages

- (i) The absence of flexibility in exchange rates means that balance of Payments (BOP) deficits on current account will not be automatically corrected; smile deficits cannot be financed forever (because reserves are limited). Governments would have to use deflationary policies to depress the demand for imports. This is likely to cause unemployment and slow down the growth of output in the country.
- (ii) Fixed exchange rates place, constraints of government policy. They must not allow the country's inflation rate to exceed that of its trading partner's smile this would cause current account deficits on the pressure on the balance of payments and lead to down ward pressure on the exchange rate. This constraint is known as policy discipline.

Floating Exchange Rate Systems

Unlike the fixed rate, a floating exchange rate is determined by the private market through supply and demand. A floating rate is often termed "self-correcting", as any differences in supply and demand will automatically be corrected in the market. Take a look at this simplified model: if demand for a currency is low, its value will decrease, thus making imported goods more expensive and thus stimulating demand for local goods and services. This in turn will generate more jobs, and hence an auto-correction would occur in the market. A floating exchange rate is constantly changing.

Under a system of floating exchange rate the government has no obligation to maintain the rate of exchange at some declared level and leaves its determination to market forces (demand & supply). However there degree to which governments will allow market forces to determine the rate of exchange for their currency

(i) Free Floating Exchange Rate.

Under this system, governments leave the deterring of the exchange rate entirely to the market forces.

No official intervention in the foreign exchange markets and hence no need of keeping any official reserves. In practice it is unlikely that governments would have no interest in the rate of exchange, for large changes in the rate have important domestic Implications especially for economies with large trade ratios, e.g. USA, UK etc.

1. Currency appreciation reduces international competitiveness and has employment and output implications.
2. Currency depreciation raises import prices and has Implication for the rate of inflation

Thus a system of managed floating is more likely to be adopted by the government than one of genuine free floating.

(ii) Managed Floating

Not surprisingly, few countries have been able to resist for long the temptation to actively intervene the foreign exchange in order to reduce the economic uncertainty associated with a clean float. Too abrupt change in the value of its currency, it is feared, could imperil a nation's export industries (if the currency appreciate) or lead to higher rate of inflation (if the currency depreciates). Exchange rate uncertainty reduces economic efficiency by acting as a tax on trade and foreign investment. Therefore, most countries with floating currencies attempt, via central banks intervention, to smooth out exchange rate fluctuations.

Under managed floating, governments allow markets to determine day to day movements in the exchange rates but may intervene to prevent very large changes. This system of managed float is also known as a dirty float.

Two approaches to managed floating are possible.

- Governments may allow the rate of exchange to fluctuate between very large bands (which are often not publicly stated) but intervene if the currency looks like moving outside of these bounds.
- Governments may allow the market to determine the trend, in the exchange rate but intervene to limit fluctuation around the trend.

Advantage of floating/flexible exchange rate system

- (i) Flexible exchange rate system provides larger degree of autonomy in respect of domestic economic policies. For, under flexible exchange rate system, it is not obligatory for the countries to tune their domestic economic policies to the fixed exchange rate.
- (ii) It is self-adjusting and therefore, it does not devolve on the government to maintain an adequate foreign exchange reserve.
- (iii) It serves as a barometer of the actual purchasing power and strength of a currency in the foreign exchange market. It serves as a useful parameter in the formulation of the domestic economic policies

The adoption of a floating exchange rate system has important implications: -

(a) Since there is greater movement of international trade either because of the risk itself or because of minimizing its cost of the exchange rate, there is the possibility of currency risk. This might lead to a lower volume sequences. The lower volume of trade implies a reduced level of economic welfare.

(b) Under floating exchange rate systems balance of payments deficits/surpluses are, in principle, automatically corrected by movements in the exchange rate. For example, a deficit leads to fall in the exchange rate; this improves completeness and corrects the deficit. Thus, there is no need for government to hold foreign reserves to finance payment disequilibrium

(c) Since the balance of payments is self-correcting, this removes constraints on government policy making. Governments can choose any combination of employment/Inflation they choose because the balance of payments Implication of their choice is atomically corrected. In effect, floating exchange rates remove the policy discipline imposed by fixed rates.

In reality, no currency is wholly fixed or floating. In a fixed regime, market pressures can also influence changes in the exchange rate. Sometimes, when a local currency does not reflect its true value against its pegged currency, a "black market" which is more reflective of actual supply and demand may develop. A central bank will often then be forced to revalue or devalue the official rate so that the rate is in line with the unofficial one, thereby halting the activity of the black market.

In a floating regime, the central bank may also intervene when it is necessary to ensure stability and to avoid inflation; however, it is less often that the central bank of a floating regime will interfere.

2.1.5 : Current Exchange System

After the Bretton Woods system broke down, the world finally accepted the use of floating foreign exchange rates during the Jamaica agreement of 1976. This meant that the use of the gold standard would be permanently abolished. However, this is not to say that governments adopted a pure free-floating exchange rate system. Most governments employ one of the following three exchange rate systems that are still used today:

1. Dollarization;
2. Pegged rate; and
3. Managed floating rate

Dollarization

This occurs when a country decides not to issue its own currency and adopts a foreign currency as its national currency. Although dollarization usually enables a country to be seen as a more stable place for investment, the drawback is that the country's central bank can no longer print money or make any sort of monetary policy. An example of dollarization is El Salvador's use of the U.S. dollar, recently decision of Zimbabwe to use South African Rand (SAR).

Pegged Rates

Pegging occurs when one country directly fixes its exchange rate to a foreign currency so that the country will have somewhat more stability than a normal float. More specifically, pegging allows a country's currency to be exchanged at a fixed rate with a single or a specific basket of foreign currencies. The currency will only fluctuate when the pegged currencies change.

For example, China pegged its Yuan to the U.S. dollar at a rate of 8.28 Yuan to US\$1, between 1997 and July 21, 2005. The downside to pegging would be that a currency's value is at the mercy of the pegged currency's economic situation. For example, if the U.S. dollar appreciates substantially against all other currencies, the Yuan would also appreciate, which may not be what the Chinese central bank wants.

Managed Floating Rates

This type of system is created when a currency's exchange rate is allowed to freely change in value subject to the market forces of supply and demand. However, the government or central bank may intervene to stabilize extreme fluctuations in exchange rates. For example, if a country's currency is depreciating far beyond an acceptable level, the government can raise short-term interest rates. Raising rates should cause the currency to appreciate slightly; but understand that this is a very simplified example. Central banks typically employ a number of tools to manage currency. As it has already been explained previously under floating systems

TOPIC 3: THE ECONOMICS OF THE FOREIGN EXCHANGE MARKET

Learning Objectives

After reading this topic you should be able to:

- Define foreign exchange market
- Understand the geographical extent of the foreign exchange market
- Understand the organization of foreign exchange market
- Explain the three main functions performed by the foreign exchange market
- Identify the main participants of foreign exchange market
- Understand the exchange rate mechanism and difference types of markets within the foreign exchange market
- Identify the types of transactions, including spot, forward and swap transactions
- Understand different methods of stating exchange rates, quotations, and changes in exchange rate.

1. BACKGROUND TO FOREIGN EXCHANGE

What Is an Exchange Rate?

An exchange rate is the rate at which one currency can be exchanged for another. In other words, it is the value of another country's currency compared to that of your own. If you are traveling to another country, you need to "buy" the local currency. Just like the price of any asset, the exchange rate is the price at which you can buy that currency. If you are traveling to Egypt, for example, and the exchange rate for USD 1.00 is EGP 5.50, this means that for every U.S. dollar, you can buy five and a half Egyptian pounds. Theoretically, identical assets should sell at the same price in different countries, because the exchange rate must maintain the inherent value of one currency against the other.

Foreign exchange (forex or FX for short) is one of the most exciting, fast-paced markets around the world. Until recently, trading in the forex market had been the domain of large financial institutions, corporations, central banks, hedge funds and extremely wealthy individuals. The emergence of the Internet has changed all of this, and now it is possible for average investors to buy and sell currencies easily with the click of a mouse.

The foreign exchange market is the "place" where currencies are traded. Currencies are important to most people around the world, whether they realize it or not, because currencies need to be exchanged in order to conduct foreign trade and business

As you know, money is anything that is accepted as a medium of exchange. In most of the world, people accept pieces of paper imprinted with pictures of national heroes or local wonders of nature as money. But in each nation, they accept different pieces of paper

This means that if someone in the United States wants to buy something from someone in, say, Tanzania, he/she must first exchange his/her local currency—dollars—for the currency accepted in Tanzania—shillings. This *currency conversion* occurs at an *exchange rate market*.

The exchange rate—the price of one nation's currency in terms of another nation's—is a central concept in international finance. Virtually any nation's currency can be converted into the currency of any other nation, thanks to exchange rates and the *foreign exchange market*. For instance, let's say the current exchange rate between the U.S. dollar and the Tanzanian shillings is \$1 to 1000 sh. This means that \$1 will buy 1000 shs and that 1000 shs will buy \$1. (I am ignoring transaction costs, such as the commission charged by the bank or foreign exchange broker who does the currency conversion.)

Importers and exporters need foreign currency in order to complete transactions. Banks and brokers maintain inventories of foreign exchange, that is, various currencies, and convert currencies as a service to customers. Traders and speculators make (or lose) money on the movement of foreign exchange rates (which I'll describe later). As you will see, central banks also play a role in the foreign exchange market.

Foreign exchange means the money of a foreign country that is foreign currency bank balances, bank notes, cheques and drafts.

A foreign exchange transaction is an agreement between a buyer and seller that a fixed amount of one currency is delivered at a specified rate for some other currency.

2. GEOGRAPHICAL EXTENT OF FOREIGN EXCHANGE MARKET

Geographically the foreign exchange market spans the globe, with prices moving and currencies traded somewhere every hour of every business day.

Major world trading starts each morning in Sidney and Tokyo, moves to Hong Kong and Singapore, passes on to Bahrain, shifts to the main European markets of Frankfurt, Zurich and London, jumps the Atlantic to New York, goes west to Chicago and ends up in Francisco and Los Angeles.

The market is deepest, or most liquid, early in the European afternoon, when the market of both Europe and the US east coast are open. This period is regarded as the best time to ensure the smooth execution of a very order.

3. ORGANIZATION OF THE FOREIGN MARKET

If there were a single international currency, there would be no need for a foreign exchange market.

The foreign exchange market is not a physical place; rather it is electronically linked networks of banks, foreign exchange brokers and dealers whose main function is to bring together buyers and sellers of foreign exchange. It is not confined to any one country but is dispersed through out the leading financial centers of the world: London, New York city, Paris, Zurich, Amsterdam, Tokyo, Toronto, Milan, Frankfurt and other cities.

Trading is generally done by telephone or telex machine. Foreign exchange traders in each bank usually operate out of a separate foreign exchange trading room.

Each trader has several telephones and surrounded by display monitors and telex and fax machines feeding up-to- the minute information.

The forex market provides plenty of opportunity for investors. However, in order to be successful, a currency trader has to understand the basics behind currency movements.

4. FUNCTIONS OF THE FOREIGN EXCHANGE MARKET

The main functions of foreign exchange market are: -

- Transfer of purchasing power
- Provision of credit
- Minimization of foreign exchange risk.

4.1 TRANSFER OF PURCHASING POWER

Transfer of purchasing power is necessary because international trade and capital transactions normally involves parties living in countries with different national currencies. Each part usually wants to deal in its own currency, but the trade or capital transaction can be invoiced in only one single currency.

If a Japanese exporter sells Toyota automobiles to a Tanzanian importer, the Japanese seller could invoice the Tanzanian buyer in Japanese yen, Tanzanian shilling or any convenient third – country currency, such as USD. The currency will be agreed as part of the deal.

If the transaction is in yen, the Tanzanian importer must buy yen with Tshs.

MUHAMMAD MUSTAFA

MBA FROM UOS

If the transaction is in Tshs, the Japanese exporter must sell the Tshs received fro yen

Mega Lecture

If US dollars are used, the Tanzanian importer must exchange Tshs for dollars, and the Japanese exporter must then exchange dollars for yen.

4.2 PROVISION OF CREDIT

Because the movement of goods between countries takes time, inventory in transit must be financed. In the case of Toyota sale, some part must finance the automobiles while they are being shipped to Tanzania and also when they are floored with Toyota dealers in Tanzania before final sale to a customer. The elapsed time might be anywhere from a few weeks to six months, depending on how cars are shipped.

4.3 MINIMIZATION OF FOREIGN EXCHANGE RISK

Neither the Tanzanian importer nor the Japanese exporter may wish to carry the risk of exchange rate fluctuation. Each may prefer to earn a normal business profit on the automobile transaction without exposure to an unexpected change in anticipated profit because exchange rates suddenly change. The foreign exchange market provides “hedging” facilities for transferring foreign exchange risk to someone else. These facilities are explained a later topic.

5. PARTICIPANTS IN THE FOREIGN EXCHANGE MARKET

Unlike the equity market - where investors often only trade with institutional investors (such as mutual funds) or other individual investors - there are additional participants that trade on the forex market for entirely different reasons than those on the equity market. Therefore, it is important to identify and understand the functions and motivations of the main players of the forex market.

The major participants in the in the foreign exchange market are the large commercial banks, foreign exchange brokers in interbank market, commercial customers (e.g. speculators, arbitragers, hedgers etc), primary multinational corporations and central banks, which intervene in the market from time to time to smooth exchange rate fluctuations or to maintain target exchange rates. Central bank intervention involving buying or selling in the market is often indistinguishable from the foreign exchange dealings of commercial banks or of other private participants.

A large fraction of the interbank transactions in United States is conducted through foreign exchange brokers, specialists in matching net supplier and demander banks.

Commercial and central bank customers buy and sell foreign exchange through their banks. However most small banks and local offices of major banks do not deal directly in the interbank market.

Governments and Central Banks

Arguably, some of the most influential participants involved with currency exchange are the central banks and federal governments. In most countries, the central bank is an extension of the government and conducts its policy in tandem with the government. However, some governments feel that a more independent central bank would be more effective in balancing the goals of curbing inflation and keeping interest rates low, which tends to increase economic growth. Regardless of the degree of independence that a central bank possesses, government representatives typically have regular consultations with central bank representatives to discuss monetary policy. Thus, central banks and governments are usually on the same page when it comes to monetary policy.

Central banks are often involved in manipulating reserve volumes in order to meet certain economic goals. For example, ever since pegging its currency (the Yuan) to the U.S. dollar, China has been buying up millions of dollars worth of U.S. treasury bills in order to keep the Yuan at its target exchange rate. Central banks use the foreign exchange market to adjust their reserve volumes. With extremely deep pockets, they yield significant influence on the currency markets.

Banks and Other Financial Institutions

In addition to central banks and governments, some of the largest participants involved with forex transactions are banks. Most individuals who need foreign currency for small-scale transactions deal with neighborhood banks. However, individual transactions pale in comparison to the volumes that are traded in the interbank market.

The interbank market is the market through which large banks transact with each other and determine the currency price that individual traders see on their trading platforms. These banks transact with each other on electronic brokering systems that are based upon credit. Only banks that have credit relationships with each other can engage in transactions. The larger the bank, the more credit relationships it has and the better the pricing it can access for its customers. The smaller the bank, the less credit relationships it has and the lower the priority it has on the pricing scale. Banks, in general, act as dealers in the sense that they are willing to buy/sell a currency at the bid/ask price. One way that banks make money on the forex market is by exchanging currency at a premium to the price they paid to obtain it. Since the forex market is a decentralized market, it is common to see different banks with slightly different exchange rates for the same currency.

Hedgers

Some of the biggest clients of these banks are businesses that deal with international transactions. Whether a business is selling to an international client or buying from an international supplier, it will need to deal with the volatility of fluctuating currencies.

If there is one thing that management (and shareholders) detest, it is uncertainty. Having to deal with foreign-exchange risk is a big problem for many multinationals. For example, suppose that a German company orders some equipment from a Japanese manufacturer to be paid in yen one year from now. Since the exchange rate can fluctuate wildly over an entire year, the German company has no way of knowing whether it will end up paying more euros at the time of delivery.

One choice that a business can make to reduce the uncertainty of foreign-exchange risk is to go into the spot market and make an immediate transaction for the foreign currency that they need.

Unfortunately, businesses may not have enough cash on hand to make spot transactions or may not want to hold massive amounts of foreign currency for long periods of time. Therefore, businesses quite frequently employ hedging strategies in order to lock in a specific exchange rate for the future or to remove all sources of exchange-rate risk for that transaction

For example, if a European company wants to import steel from the U.S., it would have to pay in U.S. dollars. If the price of the euro falls against the dollar before payment is made, the European company will realize a financial loss. As such, it could enter into a contract that locked in the current exchange rate to eliminate the risk of dealing in U.S. dollars. These contracts could be either forwards or futures contracts.

Speculators

Another class of market participants involved with foreign exchange-related transactions is speculators. Rather than hedging against movement in exchange rates or exchanging currency to fund international transactions, speculators attempt to make money by taking advantage of fluctuating exchange-rate levels.

The most famous of all currency speculators is probably George Soros. The billionaire hedge fund manager is most famous for speculating on the decline of the British pound, a move that earned \$1.1 billion in less than a month. On the other hand, Nick Leeson, a derivatives trader with England's Barings Bank, took speculative positions on futures contracts in yen that resulted in losses amounting to more than \$1.4 billion, which led to the collapse of the company.

Some of the largest and most controversial speculators on the forex market are hedge funds, which are essentially unregulated funds that employ unconventional investment strategies in order to reap large returns. Think of them as mutual funds on steroids. Hedge funds are the favorite whipping boys of many a central banker. Given that they can place such massive bets, they can have a major effect on a country's currency and economy. Some critics blamed hedge funds for the Asian currency crisis of the late 1990s, but others have pointed out that the real problem was the ineptness of Asian central bankers. Either way, speculators can have a big sway on the currency markets, particularly big ones.

Now that you have a basic understanding of the forex market, its participants and its history, we can move on to some of the more advanced concepts that will bring you closer to being able to

trade within this massive market. The next section will look at the main economic theories that underlie the forex market

TYPES OF Currency Markets

There are actually three ways that institutions, corporations and individuals trade forex: the spot market, the forwards market and the futures market. The spot market always has been the largest market because it is the "underlying" real asset that the forwards and futures markets are based on. In the past, the futures market was the most popular venue for traders because it was available to individual investors for a longer period of time. However, with the advent of electronic trading, the spot market has witnessed a huge surge in activity and now surpasses the futures market as the preferred trading market for individual investors and speculators. When people refer to the forex market, they usually are referring to the spot market. The forwards and futures markets tend to be more popular with companies that need to hedge their foreign exchange risks out to a specific date in the future.

1. Spot Market

The market for currency for immediate delivery. The price of foreign exchange in the spot market is referred to as the spot exchange rate or simply the *spot rate*.

More specifically, the spot market is where currencies are bought and sold according to the current price. That price, determined by supply and demand, is a reflection of many things, including current interest rates, economic performance, sentiment towards ongoing political situations (both locally and internationally), as well as the perception of the future performance of one currency against another. When a deal is finalized, this is known as a "spot deal". It is a bilateral transaction by which one party delivers an agreed-upon currency amount to the counter party and receives a specified amount of another currency at the agreed-upon exchange rate value. After a position is closed, the settlement is in cash. Although the spot market is commonly known as one that deals with transactions in the present (rather than the future),

These trades actually take two days for settlement.

2. Forward Market

The market for the exchange of foreign currencies at a future date. A forward contract usually represents a contract between a large money center bank and a well-known (to the bank) customer having a well-defined need to hedge exposure to fluctuations in exchange rates. Although forward contracts usually call for the exchange to occur in either 30, 90 or 180 days, 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. The price of foreign currency for future delivery is typically referred to as a forward exchange rate or simply a *forward rate*.

3. Futures Market

Although the futures market trading is similar to forward market trading in that all transactions are to be settled at a future date, futures markets are actual physical locations where anonymous participants trade standard quantities of foreign currency (e.g., 125,000 DM per contract) for delivery at standard future dates (e.g., March, June, September, and December).

The most active forward markets are those for the Japanese yen and the German mark. Active markets also exist for the British pound, the Canadian dollar and the major continental currencies, the Swiss franc, the French franc, the Belgian franc, the Italian Lira and the Dutch guilder. Forward markets for currencies of less developed countries are either limited or nonexistent. The Chicago Mercantile Exchange trades futures contracts on yen, marks, Canadian dollars, British pounds, Swiss francs, Australian dollars, Mexican peso's and euros.

CURRENCY QUOTATIONS

One of the biggest sources of confusion for those new to the currency market is the standard for quoting currencies. In this section, I'll go over currency quotations and how they work in currency pair trades.

Reading a Quote

When a currency is quoted, it is done in relation to another currency, so that the value of one is reflected through the value of another. Therefore, if you were trying to determine the exchange rate between the U.S. dollar (USD) and the Japanese yen (JPY), the quote would look like this:

USD/JPY = 119.50

This is referred to as a currency pair. The currency to the left of the slash is the **base** currency, while the currency on the right is called the **quote** or counter currency. The base currency (in this case, the U.S. dollar) is always equal to one unit (in this case, US\$1), and the quoted currency (in this case, the Japanese yen) is what that one base unit is equivalent to in the other currency. The quote means that US\$1 = 119.50 Japanese yen. In other words, US\$1 can buy 119.50 Japanese yen.

Direct Quote vs. Indirect Quote

There are two ways to quote a currency pair, either directly or indirectly. The two methods are referred to as the direct (American) and indirect (European) methods of quotation .

A **direct quote**: A foreign exchange quote that states the number of units of the domestic currency needed to buy one unit of the foreign currency.

Indirect quote: A foreign exchange quote that states the number of units of a foreign currency needed to buy one unit of the domestic currency. So if you were looking at the Canadian dollar as the domestic currency and U.S. dollar as the foreign currency, a direct quote would be CAD/USD, while an indirect quote would be USD/CAD.

1. Direct/American Quotation

The dollar price of one unit of foreign currency. For example, a direct quotation of the exchange rate between dollar and the British pound (German mark) is \$1.6000/£1 (\$0.6000/DM1), indicating that the dollar cost of one British pound (German mark) is \$1.6000 (\$0.6000). Direct exchange rate quotations are most frequently used by banks in dealing with their non-bank customers. In addition, the prices of currency futures contracts traded on the Chicago Mercantile Exchange are quoted using the direct method.

Hence, direct quote is the expression of units of home (domestic) currency in terms of a unit of foreign currency. E.g Tshs 1280/US\$

2. Indirect/European Quotation

The number of units of a foreign currency that are required to purchase one dollar. For example, an indirect quotation of the exchange rate between the dollar and the Japanese yen (German mark) is ¥125.00/\$1 (DM 1.6667/\$1), indicating that one dollar can be purchased for either 125.00 Japanese Yen or 1.6667 German Marks.

More examples, if Canada is the domestic currency, a direct quote would be 0.85 CAD/USD, which means with C\$1, you can purchase US\$0.85. The indirect quote for this would be the inverse (1/0.85), which is 1.18 USD/CAD and means that USD\$1 will purchase C\$1.18.

In the forex spot market, most currencies are traded against the U.S. dollar, and the U.S. dollar is frequently the base currency in the currency pair. In these cases, it is called a direct quote. This would apply to the above USD/JPY currency pair, which indicates that US\$1 is equal to 119.50 Japanese yen.

However, not all currencies have the U.S. dollar as the base. The Queen's currencies - those currencies that historically have had a tie with Britain, such as the British pound, Australian Dollar and New Zealand dollar - are all quoted as the base currency against the U.S. dollar. The euro, which is relatively new, is quoted the same way as well. In these cases, the U.S. dollar is the counter currency, and the exchange rate is referred to as an indirect quote. This is why the EUR/USD quote is given as 1.25, for example, because it means that one-euro is the equivalent of 1.25 U.S. dollars.

Most currency exchange rates are quoted out to four digits after the decimal place, with the exception of the Japanese yen (JPY), which is quoted out to two decimal places.

The Relation between Direct and Indirect Exchange Rate Quotations

An indirect exchange rate quotation is simply the reciprocal of the direct exchange rate quotation. In other words

$$S_{F/\$}^{\text{Indirect}} = \frac{1}{S_{\$/F}^{\text{Direct}}}$$

Where the superscripts are actually unnecessary in that we will use the notation F/\$ to denote an indirect quotation in terms of units of currency F required to purchase one dollar. Similarly, we will use the notation \$/F to denote a direct quotation in terms of the number of dollars required to purchase one unit of currency F. To illustrate this principal, suppose that the direct quotation for the exchange rate between the dollar and the German mark is \$0.6000/DM1. Then the indirect quotation for the exchange rate between the dollar and the mark would be

$$\begin{aligned} S_{\text{DM}/\$} &= \frac{1}{\$0.6000/\text{DM1}} \\ &= \text{DM1.6667}/\$1. \end{aligned}$$

Bid and Ask

As with most trading in the financial markets, when you are trading a currency pair there is a bid price (buy) and an ask price (sell). Again, these are in relation to the base currency. When buying a currency pair (going long), the ask price refers to the amount of quoted currency that has to be paid in order to buy one unit of the base currency, or how much the market will sell one unit of the base currency in relation to the quoted currency

The bid price is used when selling a currency pair (going short) and reflects how much of the quoted currency will be obtained when selling one unit of the base currency, or how much the market will pay for the quoted currency in relation to the base currency.

The quote before the slash is the bid price, and the two digits after the slash represent the ask price (only the last two digits of the full price are typically quoted). Note that the bid price is always smaller than the ask price. Let's look at an example:

USD/CAD	=	1.2000/05
Bid	=	1.2000
Ask	=	1.2005

If you want to buy this currency pair, this means that you intend to buy the base currency and are therefore looking at the ask price to see how much (in Canadian dollars) the market will charge for U.S. dollars. According to the ask price, you can buy one U.S. dollar with 1.2005 CAD.

However, in order to sell this currency pair, or sell the base currency in exchange for the quoted currency, you would look at the bid price. It tells you that the market will buy US\$1 base currency (you will be selling the market the base currency) for a price equivalent to 1.2000 Canadian dollars, which is the quoted currency.

Whichever currency is quoted first (the base currency) is always the one in which the transaction is being conducted. You either buy or sell the base currency. Depending on what currency you want to use to buy or sell the base with, you refer to the corresponding currency pair spot exchange rate to determine the price.

TRANSACTION COST

The bid-ask spread- that is, the spread between bid and ask rates for a currency is based on the breadth and depth of the market for that currency as well as on the currency's volatility. This spread is usually stated as a percentage cost of transacting in the foreign exchange market, which is computed as follows:

$$\text{Percentage spread} = \frac{\text{Ask price} - \text{Bid price}}{\text{Ask price}} \times 100$$

For example, suppose a sterling pound is quoted at US\$ 1.7019-36, what is the percentage spread?

$$\text{Percentage spread} = \frac{1.7036 - 1.7019}{1.7036} \times 100 = 0.1\%$$

CROSS EXCHANGE RATE.

The complications in the exchange market arise when both currencies related to the transactions are not quoted in either of the currency. To find the exchange rate between the currencies we should work out through the relationship to the currency in which each currency is quoted. The rate obtained is called cross rate. *Therefore cross rate is the exchange rate between two currencies derived from their exchange rates against another currency.*

The usefulness of cross rates is:

- (i) Used to determine the exchange rates between currencies

Illustration 1.

The Tanzania importer needs Zambian Kwacha to pay a Zambian exporter for the goods purchased from him. The amount to be paid is kwacha 1,000 million. Tanzanian shillings are not quoted against Zambian kwacha, but both currencies are quoted against U.D dollar. The trader contracted for spot rate basis. At that time the quotes against dollar were Tsh900/US\$ and the kwacha100/US\$

Required:

1. What will be the exchange rate between Tanzania shillings and Zambian kwacha?
2. How much Tanzanian shillings should be given to get 1,000 million kwacha to effect payment to Zambian exporter?

Illustration 2

Suppose that sterling pound is quoted at US\$ 1.7019-36, while the Deutch mark is quoted at US\$0.6250-67. What is the direct quote for the pound in Frankfurt?

- (ii) Cross rate is used to check if the opportunities for inter market arbitrage exist

MARKET ARBITRAGE

Purchasing and selling the same security at the same time in different markets to take advantage of a price difference between the two separate markets.

An arbitrageur would short sell the higher priced stock and buy the lower priced one. The profit is the spread between the two assets

ARBITRAGE

Refers to the exploitation of price difference in order to make a risk free profit.

The simultaneous purchase and sale of an asset in order to profit from a difference in the price. This usually takes place on different exchanges or marketplaces. Also known as a "risk less profit".

There are mainly two types of arbitration: - foreign exchange arbitrage and interest rate arbitrage. Interest rate arbitrage will be covered in the later topic.

FOEREIGN EXCHANGE ARBITRAGE

This is the exploitation of exchange rate differentials or inconsistencies to make a risk less profit. An important characteristic of the arbitrage is that it has the effect of eliminating the differentials, which give rise to profit opportunities. For example, suppose that, sterling exchange rate quoted in London is $GBP1=US\$2$ while in New York is $GBP1=US\$1.95$. Assuming no transaction cost, it would be profitable to sell sterling in London and simultaneously buy sterling in New York. A sale of $GBP1000$ in London, for example would yield $US\$ 2000$. These dollars could then be exchanged for $\$2000/1.95 = GBP1025.64$ in New York, making a risk less profit of $GBP25.64$. Such purchases and sales however will lead to an:

Appreciation of sterling in New York

Depreciation of sterling in London

Here's an example of arbitrage: Say a domestic stock also trades on a foreign exchange in another country, where it hasn't adjusted for the constantly changing exchange rate. A trader purchases the stock where it is undervalued and short sells the stock where it is overvalued, thus profiting from the difference. Arbitrage is recommended for experienced investors only.

Triangular Arbitrage

The process of converting one currency to another, converting it again to a third currency and, finally, converting it back to the original currency within a short time span. This opportunity for risk less profit arises when the currency's exchange rates do not exactly match up. Triangular arbitrage opportunities do not happen very often and when they do, they only last for a matter of seconds. Traders that take advantage of this type of arbitrage opportunity usually have advanced computer equipment and/or programs to automate the process.

Simply, triangular arbitrage process involves the following steps:-

- Acquiring the domestic currency
- Exchange the domestic currency for the common currency
- Convert the obtained units of the common currency into the second (other) currency
- Convert the obtained units of the other currency into the domestic currency

Given the exchange rate between the dollar and the British Pound, $S_{\$/\pounds}$, and the exchange rate between the dollar and the German Mark, $S_{\$/DM}$, the exchange rate between the German Mark and the British Pound, $S_{DM/\pounds}$, should be:-

$$S_{DM/\pounds} = \frac{S_{\$/\pounds}}{S_{\$/DM}} .$$

For example, if the exchange rate between the dollar and the British Pound is \$1.50/£1 and the exchange rate between the dollar and the German Mark is \$.75/DM1, the exchange rate between the German Mark and the British Pound is: -

$$\begin{aligned} S_{DM/\pounds} &= \frac{\$1.50/\pounds1}{\$.75/DM1} , \\ &= DM2/\pounds1. \end{aligned}$$

If the exchange rate between the German Mark and the British Pound were either greater or less than DM2/£1, then a triangular arbitrage opportunity will be available. For example, suppose that the Mark/Pound exchange rate were DM2.1/£1. Then a trader with two German Marks would (1) exchange them for \$1.50 (2 x \$.75/DM1). The \$1.5 would then (2) be exchanged for one British Pound, which would then (3) be used to purchase DM 2.1, which is greater than the number of German Marks that the trader started with.

Illustration 1

You are given the following exchange rates

Dutch guilders per US dollar	f1 1.9025/US\$
Canadian dollars per US dollar	C\$ 1.2646/US\$
Dutch guilders per Canadian dollar	f1 1.5214/C\$

Required

- Is there any opportunity for arbitration?
- How a Dutch trader with f11,000,000 can use that amount to benefit from the inter market arbitration?
- What will be the profit or loss for a Dutch trader?

Solution

(a) This can be done by finding a cross rate of Dutch guilders against Canadian dollar and compare it with the actual quotation. If the cross rate is not the same as actual quotation, then the arbitrage opportunity exists

If the cross rate < actual quotation = opportunity for profit

If the cross rate > actual quotation = opportunity for loss

Hence,

Cross rate will be $\frac{\text{f1 } 1.9025/\text{US\$}}{\text{C\$ } 1.2646/\text{US\$}} = \text{f1 } 1.5044/\text{C\$}$

Since this is not the same as actual quotation, then there is opportunity for inter market arbitration

(b) A Dutch trader will follow the following steps to benefit from inter market arbitration

- Sell fl 1,000,000 in the spot market at fl 1.9025/US\$ and get US\$ 525,624
- Simultaneously sell the proceed US\$525,624 in United States at C\$1.2646/US\$ and get C\$ 664,704
- Resell Canadian dollar of C\$664,704 at the rate of fl1.5214/C\$, hence obtain fl 1,011,281

(c) The profit from arbitration is fl1, 011,281 – fl 1,000,000 = fl 11,281.

Illustration 2.

Suppose you have \$1 million and you are provided with the following exchange rates:
EUR/USD = 0.8631, EUR/GBP = 1.4600 and USD/GBP = 1.6939

With these exchange rates there is an arbitrage opportunity:

Sell dollars for euros: \$1 million x 0.8631 = 863,100 euros

Sell euros for pounds: 863,100/1.4600 = 591,164.40 pounds

Sell pounds for dollars: 591,164.40 x 1.6939 = \$1,001,373 dollars

\$1,001,373 - \$1,000,000 = \$1,373

from these transactions, you would receive an arbitrage profit of \$1,373 (assuming no transaction costs or taxes).

THE FORWARD MARKET

Unlike the spot market, the forward markets do not trade actual currencies. Instead they deal in contracts that represent claims to a certain currency type, a specific price per unit and a future date for settlement.

In the forwards market contracts are bought and sold OTC between two parties, who determine the terms of the agreement between themselves.

Forward contracts are binding and are typically settled for cash for the exchange in question upon expiry, although contracts can also be bought and sold before they expire. The forwards can offer protection against risk when trading currencies. Usually, big international corporations use these markets in order to hedge against future exchange rate fluctuations; speculators take part in these markets as well. (For a more in-depth introduction to futures).

Forward exchange operations carry the same credit risk as spot transactions, but for longer periods of time, however there are significant exchange risks involved.

A forward contract between a bank and customer (which could be another bank) calls for delivery at a fixed future date, of a specified amount of one currency against dollar payment, the exchange rate is fixed at the time the contract is entered into. Hence, a forward market is the market in which currencies are bought and sold now but delivery is done sometimes in the future.

Forward exchange contracts allow a trader who knows that he/she will have to buy or sell foreign currency at a date in future to make the purchase or sale at a pre-determined rate of exchange. The forward currency exchange rate is dependent on: -

- Spot rate
- Short term fixed interest rates in each currency.

Forward rate can be calculated today without making any estimates of future exchange. Future exchange rates depend on future events and will often turn out to be very different from the forward rate.

In a typical forward transaction, for example, a U.S company buys textiles from England with payment of £ 1 million due in 90 days. The importer, thus, is short pounds-that is it owes pounds for future delivery. Suppose the present price of the pound is \$1.71 over the next 90 days, however the pound might rise against the dollar, raising the dollar cost of the textiles. The importer can guard against this exchange risk by immediately negotiating a 90-day forward contract with a bank at a price of say £=\$1.72. According to the forward contract, in 90 days the bank will give the importer £1 million (which it will use to pay for its textiles order) and the importer will give the bank \$1.72 million, which is the dollar equivalent of £1 million at the forward rate of \$1.72.

How are Forward rates derived?

Forward rates are derived by applying current market interest rates to the spot exchange rate. A simple example might illustrate this point

Suppose that the spot GBP/US dollar rate is 1 GBP = \$ 1.50, and that the one-year interest rate is 6% for sterling and 4% for the US dollar. According to market prices, this means: -

- 1,000 GBP has an equivalent spot value of \$ 1,500
- An investor with sterling 1,000 who wants to exchange the sterling into dollars in one year has two ways of doing this. He can buy \$1,500 now (spot) and invest the dollars for one year at 4% to earn \$1,560 at the end of one year. Alternatively, he can invest 1,000 GBP for one year at 6% to earn 1,060 sterling and then exchange the sterling for US dollars.

For market rates to stabilize, this means that given the current spot exchange rate and current one year interest rates, 1,060 sterling in one year has an equivalent value of \$1,560, and so an appropriate one-year forward rate now would be $1 \text{ GBP} = \$1.4717$ ($1,560/1,060$)

The dollar would be stronger against sterling one year forward (at 1.4717), compared to the spot rate (1.5000). This is because the interest rate is lower on the dollar than on sterling.

Example.

Suppose that the spot rate for the euro against the US dollar is $\text{GBP } 1 = \$1.1500$. The one-year rate of interest is 2.5% on the euro and 3.5% on the US dollar.

Required

- (i) What would you expect the current one-year forward rate to be?
- (ii) Is the dollar stronger or weaker one-year forward compared with the spot rate? Why is this case?

Forward quotation

Forward rates can be expressed in two ways: -

Commercial customers are usually quoted the actual price, otherwise known as the **outright rate**. In the interbank market, however, dealers quote the forward rate only as a discount from or a premium on, the spot rate. This forward differential is known as the **swap rate**.

Forward premium and forward discount

A foreign currency is at a forward discount if the forward rate expressed in dollars (home currency) is below the spot rate; where as forward premium exists if the forward rate is above the spot rate.

Hence, forward premium is the situation when the forward rate is greater than the spot rate and forward discount is the situation when the forward rate is less than the spot rate.

A premium or discount is simply the amount by which the forward rate differs from the spot rate and the size of the premium or discount depends on the difference in interest rates between the two currencies.

Whether the forward rate is weaker or stronger than the spot rate depends on which currency has the higher and which has the lower interest rate. The currency with the lower interest rate is always stronger forward than spot against the currency with the higher interest rate.

MUHAMMAD MUSTAFA

MBA FROM UOS

Forward quotations may also be expressed as the percentage per annum deviation from the spot rate. This method of quotations facilitates comparing premiums or discounts in forward market with interest rate differentials.

The percentage premiums or discount depends on which currency is the home or base.

When the home currency price for a foreign currency is used (direct quote), the formula for the percent premium or discount is

As annualized percentage deviation from the spot rate.

$$\text{Forward premium/discount} = \frac{\text{forward rate} - \text{spot rate}}{\text{Spot rate}} \times \frac{12}{\text{forward contract length In months}} \times 100$$

$$\text{Or} \quad = \frac{\text{forward rate} - \text{spot rate}}{\text{Spot rate}} \times \frac{360}{n} \times 100\%$$

When the foreign currency price of the home currency is used (indirect), the formula for the percent- per annum premium or discount becomes

$$= \frac{\text{Spot rate} - \text{forward rate}}{\text{Forward rate}} \times \frac{360}{n} \times 100\%$$

E.g. 90-day pound is quoted at \$ 1.6745 while spot pound is \$ 1.7015. Find forward premium or discount

Soln

$$\begin{aligned} \text{Forward premium/discount} &= \frac{1.6745 - 1.7015}{1.7015} \times \frac{12}{3} \\ &= -0.0635 \\ &= -6.35\% \end{aligned}$$

Conversion of Swap Rates into Outright Rate

A swap rate can be converted into an outright rate by adding the premium (in points) to or subtracting the discounts (in points) from the spot rate. Although the swap rates do not carry plus or minus signs, you can determine whether the forward rate is at a discount or premium using the following rule.

When the forward bid in points is smaller than offer rate in points, the forward rate is at

Rules for calculating forward rate from spot rate

- Subtract a premium from the spot rate
- Add a discount to the spot rate

Example

The spot sterling/US dollar rate is 1.4690 – 1.4700

The dollar is quoted one month forward as follows

1 month 29 – 25 pm

The dollar is quoted forward in this example at a premium (pm). A discount is indicated by “dis”

The size of the premium is quoted in “points”. The sterling/US dollar rate is quoted to 4 decimal places, and so a point is 0.0001. The premium is therefore 0.0029-0.0025

Spot rate	1.4690 - 1.4700
Subtract premium	<u>0.0020 - 0.0025</u>

Forward rate	<u>1.4670 -1.4675</u>
--------------	------------------------------

BENEFITS AND THE RISK OF FOREX

In this section, we'll take a look at some of the benefits and risks associated with the forex market. We'll also discuss how it differs from the equity market in order to get a greater understanding of how the forex market works.

The Good and the Bad

We already have mentioned that factors such as the size, volatility and global structure of the forex market have all contributed to its rapid success. Given the highly liquid nature of this market, investors are able to place extremely large trades without affecting any given exchange rate. These large positions are made available to traders because of the low margin requirements used by the majority of the industry's brokers. For example, it is possible for an investor to control a position of US\$100,000 by putting down as little as US\$1,000 up front and borrowing the remainder from his or her broker. This amount of leverage acts as a double-edged sword because investors can realize large gains when rates make a small favorable change, but they also run the risk of a massive loss when the rates move against them. Despite the risks, the amount of leverage available in the forex market is what makes it attractive for many speculators

The currency market is also the only market that is truly open 24 hours a day with decent liquidity throughout the day. For traders who may have a day job or just a busy schedule, it is an optimal market to trade in. As you can see from the chart below, the major trading hubs are spread throughout many different time zones, eliminating the need to wait for an opening or closing bell. As the U.S. trading closes, other markets in the East are opening, making it possible to trade at any time during the day.

Time Zone	Time (ET)
Tokyo Open	7:00 pm
Tokyo Close	4:00 am
London Open	3:00 am
London Close	12:00 pm
New York Open	8:00 am
New York Close	5:00 pm

While the forex market may offer more excitement to the investor, the risks are also higher in comparison to trading equities. The ultra-high leverage of the forex market means that huge gains can quickly turn to damaging losses and can wipe out the majority of your account in a matter of minutes. This is important for all new traders to understand, because in the forex market - due to the large amount of money involved and the number of players - traders will react quickly to information released into the market, leading to sharp moves in the price of the currency pair.

Though currencies don't tend to move as sharply as equities on a percentage basis (where a company's stock can lose a large portion of its value in a matter of minutes after a bad announcement), it is the leverage in the spot market that creates the volatility. For example, if

you are using 100:1 leverage on \$1,000 invested, you control \$100,000 in capital. If you put \$100,000 into a currency and the currency's price moves 1% against you, the value of the capital will have decreased to \$99,000 - a loss of \$1,000, or all of your invested capital, representing a 100% loss. In the equities market, most traders do not use leverage, therefore a 1% loss in the stock's value on a \$1,000 investment, would only mean a loss of \$10. Therefore, it is important to take into account the risks involved in the forex market before diving in.

Differences between Forex and Equities

A major difference between the forex and equities markets is the number of traded instruments: the forex market has very few compared to the thousands found in the equities market. The majority of forex traders focus their efforts on seven different currency pairs: the four majors, which include (EUR/USD, USD/JPY, GBP/USD, USD/CHF); and the three commodity pairs (USD/CAD, AUD/USD, NZD/USD). All other pairs are just different combinations of the same currencies, otherwise known as cross currencies. This makes currency trading easier to follow because rather than having to cherry-pick between 10,000 stocks to find the best value, all that FX traders need to do is “keep up” on the economic and political news of eight countries

The equity markets often can hit a lull, resulting in shrinking volumes and activity. As a result, it may be hard to open and close positions when desired. Furthermore, in a declining market, it is only with extreme ingenuity that an equities investor can make a profit. It is difficult to short-sell in the U.S. equities market because of strict rules and regulations regarding the process. On the other hand, forex offers the opportunity to profit in both rising and declining markets because with each trade, you are buying and selling simultaneously, and short-selling is, therefore, inherent in every transaction. In addition, since the forex market is so liquid, traders are not required to wait for an **up tick** before they are allowed to enter into a short position - as they are in the equities market.

Due to the extreme liquidity of the forex market, **margins** are low and leverage is high. It just is not possible to find such low margin rates in the equities markets; most margin traders in the equities markets need at least 50% of the value of the investment available as margin, whereas forex traders need as little as 1%. Furthermore, commissions in the equities market are much higher than in the forex market. Traditional brokers ask for commission fees on top of the spread, plus the fees that have to be paid to the exchange. Spot forex brokers take only the spread as their fee for the transaction.

By now you should have a basic understanding of what the forex market is and how it works?

CONCLUSION

Let's recap:

- The forex market represents the electronic over-the-counter markets where currencies are traded worldwide 24 hours a day, five and a half days a week. The typical means of trading forex are on the spot, futures and forwards markets.
- Currencies are "priced" in currency pairs and are quoted either directly or indirectly.
- Currencies typically have two prices: bid (the amount that the market will buy the quote currency for in relation to the base currency); and ask (the amount the market will sell one unit of the base currency for in relation to the quote currency). The bid price is always smaller than the ask price.
- Unlike conventional equity and debt markets, forex investors have access to large amounts of leverage, which allows substantial positions to be taken without making a large initial investment.
- The adoption and elimination of several global currency systems over time led to the formation of the present currency exchange system, in which most countries use some measure of floating exchange rates.
- Governments, central banks, banks and other financial institutions, hedgers, and speculators are the main players in the forex market.
- The main economic theories found in the foreign exchange deal with parity conditions such as those involving interest rates and inflation. Overall, a country's qualitative and quantitative factors are seen as large influences on its currency in the forex market.
- Fundamental analysis forex traders view currencies and their countries like companies, thereby using economic data to gain an idea of the currency's true value.
- Technical analysis forex traders look at currencies no differently than any other asset and, therefore, use technical tools such as trends, charts and indicators in their trading strategies.
- Unlike stock trades, forex trades have minimal commissions and related fees. But new traders should take a conservative approach and use orders, such as the take-profit or stop-loss, to minimize losses.

TOPIC4: THE ECONOMICS OF INTERNATIONAL FINANCE

4.1: PURCHASING POWER PARITY (PPP)

If home inflation is lower than that of the foreign country, the home currency should be strong in value. The PPP is the key theory that explains the relationship between currencies; in essence it claims that a change in relative inflation must result in a change in exchange rates in order to keep prices of goods in two countries fairly similar.

The PPP is useful in explaining the relationship between exchange rates, but is not perfect. We need to make assumption about equilibrium exchange rates at some starting point and recognize that currencies are rarely related accurately in two-country world. When several currencies are involved, it is difficult to use prices to determine an equilibrium rate. Exchange rates are essentially functioning of traded goods, whereas inflation relates to all goods whether traded or not.

The implication is that the exchange will be determined in some way by the relationship between prices. This arises from the law of one price. The law of one-price states, that “in a free market with no barriers to trade no transport or transaction cost, the competitive process will ensure that there will only be one price for any given good”

In its exchange rate, it follows that if inflation rates can be predicted, so can movements in exchange rates.

In practice, the purchasing power parity model has shown some weakness and is a poor predictor of short term changes in exchange rates.

- It ignores the effects of capital movement on the exchange rate.
- Trade and therefore exchange rates will only reflect the prices of goods which enter into international trade and not the general price level since this include no-tradable
- Government may manage exchange rates. E.g. by interest rate policy

It is likely that the purchasing power parity model may be more useful for predicting long run changes in exchange rates since these are more likely to be determined by the underlying competitiveness of economies as measured by the model.

If price differences occurred they would be removed by arbitrage, entrepreneurs would buy in the market and resell in the high market. This would eradicate the price difference.

If this law is applied to international transactions, it suggests that exchange rates will always adjust to ensure that only one price exists between countries where there is relatively free trade.

Thus if a typical set cost £500 in the UK, free trade would produce an exchange rate of 1 £to \$2.

How does this result come about? Let us suppose that the rate of exchange was \$1.5 to £1, the sequence of events would be: -

- US purchaser could buy UK goods more cheaply
- There would be flow of UK exports to US this would represent demand for sterling
- The sterling exchange rate would rise
- When the exchange rate reached \$2 to 1£, there would be no extra US demand for UK exports since prices would have been equalized. Purchasing power parity would have been established.

The clear prediction of the purchasing power parity model of exchange rate determination is that, if a country experiences a faster rate of inflation than its trading partners, it will experience depreciation.

Forms of Purchasing Power Parity

There are two forms of PPP

(i) Absolute form of PPP

(ii) Relative form

They are discussed as follows: -

(i) The Absolute Form

The absolute form also is called the “law of one price” it suggests that prices of similar products of two different countries should be equal when measured in a common currency.

If a discrepancy in [prices as measured by a common currency exists, the demand should shift so that these prices should converge.

Illustration

Let P_{URT} = the price of commodity in Tanzania

P_K = the price of similar commodity in Kenya

Expected exchange rate Tshs against Kshs is expressed as E (Tshs/Kshs)

The law of one price is given as:-

$$P_{URT} = E \text{ (Tshs/Kshs)} \times P_K \dots\dots\dots(1)$$

Rearranging the equation above

$$E \text{ (Tshs/Kshs)} = \frac{P_{URT}}{P_K} \dots\dots\dots(2) \quad \text{That is the ratio of relative inflation rates.}$$

MUHAMMAD MUSTAFA

MBA FROM UOS

PK

Mega Lecture

If inflation falls in Kenya the right hand side of equation (2) above will become smaller, thus the exchange rate of Kenya shillings against Tanzania shillings will fall by a proportional amount (lower inflation increases value of the Kshs in terms of the exchange rate).

The theory can nevertheless be used to explain the changes in the international levels of prices and for determining the changes in the exchange rate. For example, let P_{a0} and P_{b0} represent the price levels in countries A and B, respectively, in base (0) year and R_0 be the exchange rate between their respective currencies. The rate of exchange (R_1) between the two currencies in some future year may be calculated as follows:

$$R_1 = R_0 \left[\frac{P_{a1}/P_{a0}}{P_{b1}/P_{b0}} \right] \quad \text{and} \quad R_0 \left[\frac{P_{a1}/P_{b0}}{P_{a0}/P_{b1}} \right]$$

Where P_{a1} and P_{b1} denote price levels (price index number) for countries A and B in the reference year, respectively.

Example: Suppose the current U.S price level is at 112 while the German price level is at 107, relative to base price levels of 100. If the initial of the Deutsche mark was \$ 0.48, then according to PPP, the dollar value of the DM should have risen to approximately \$0.5024 ($0.48 \times 112/107$), an appreciation of 4.67%. On the other hand, if the German price level now equals 119, then the DM should have depreciated by about 5.88%, to \$0.4518 ($0.48 \times 112/119$)

(ii) The Relative Form of PPP

The relative form of PPP is an alternative version that accounts for the possibility of market imperfections such as transportation costs, tariffs and quotas.

This version acknowledges that, because of these market imperfections, prices of similar products of different countries will not necessary be the same when measured in a common currency.

However, it states that the rate of change in the prices of products should be somewhat similar when measured in a common currency, as long as the transportation costs and trade barriers are unchanged.

To illustrate the relative form of PPP, assume that two countries may experience inflation, for PPP to hold, the exchange rate should adjust to offset the differential in the inflation rates of the two countries. If this occurs, the pieces of goods in either country should appear similar to consumers. That is, consumers should note little difference in their purchasing power in the two countries.

The parity states that, the exchange rate between the domestic currency and any foreign currency will adjust to reflect changes in the price levels (inflation) in the two countries.

So here we are interested in two elements

Exchange rate (e) and the Inflation rate (i)

It is presented by the following formula

$$\frac{e_t}{e_0} = \frac{(i + i_h)^t}{(i + i_f)^t}$$

Where, e_t = domestic currency value of the foreign currency at time t

e_0 = domestic currency value of the foreign currency value at time 0 (spot rate)

i_h = periodic inflation in the domestic country

i_f = the periodic inflation in the foreign country

One period version t=1

$$\frac{e_t}{e_0} = \frac{(i + i_h)}{(i + i_f)}$$

The one period version is often represented by the following approximation

$$\frac{e_t - e_0}{e_0} = i_h - i_f$$

That is to say, exchange rate change = inflation differential.

Therefore, according to PPP the exchange rate change during given period should be equal to the inflation differential in that same time period.

According to PPP currency with high rate of inflation should devalue relative to currencies with low rates of inflation.

In practice the PPP model has shown some weakness and is poor predictor of short term changes in exchange rates.

Illustration

The United States and German are running annual inflation rates of 5% and 3% respectively. The initial exchange rate is DM= \$0.75

Calculate the value of DM in three years (assume PPP holds)

Soln

If PPP holds, $\frac{e_t}{e_0} = \frac{(i + i_h)}{(i + i_f)}$

$$e_3 = 0.75 \frac{(1 + 0.05)^3}{(1 + 0.03)^3}$$

= 0.7945

4.2: THE FISHER EFFECT (FE)

The interest rates that are quoted in the financial press are nominal rates. That is, they are expressed as the rate of exchange between current and future dollars (home currency). For example, a nominal interest rate of 8% on a one-year loan means that \$1.08 must be repaid in one year for \$1.00 loaned today. But what really matters to both parties to a loan agreement is the **Real Interest rate**, the rate at which current goods are being converted into future goods.

Looked at one way, the real rate of interest is the net increase in wealth that people expect to achieve when they save and invest their current income.

Alternatively, it can be viewed as the added future consumption promised by a corporate borrower to lender in return for the latter's differing current consumption.

However, all financial contracts are stated in nominal terms, the real interest rate must be adjusted to reflect inflation.

The Fisher effect states that, the nominal interest rate r is made up of two components:

- A real required rate of return "a"
- An inflation premium equal to the expected amount of inflation "i"

Hence, Fisher Effect is

$1 + \text{Nominal interest rate} = (1 + \text{real required rate of return}) (1 + \text{expected inflation rate})$

$$1 + r = (1 + a) (1 + i)$$

Where, r = nominal rate

a = real rate

i = inflation rate

$$\text{Or } r = a + i + ai$$

This formula is often approximated by the equation

$$r = a + i \quad \text{or} \quad a = r - i$$

The Fisher equation says, for example, that if the required real return is 3% and expected inflation is 10%, then the nominal interest rate will be about 13% (13.3% to be exact). The logic behind this result is

that \$1 next year will have the purchasing power of \$0.9 in terms of today's dollar. Thus the borrower must pay the lender \$ 0.103 to compensate for the erosion in the purchasing power of the \$ 1.03 in principal and interest payments, in addition to the \$ 0.03 necessary to provide a 35 real return.

Generalized version of Fisher Effect

The generalized version of the Fisher Effect asserts that real returns are equalized across countries through arbitrage. That is, $a_h = a_f$, where h and f refer to home and foreign. If expected real return were higher in one currency than another, capital would flow from the second to the first currency.

This process of arbitrage would continue, in the absence of government intervention, until expected real returns were equalized.

In equilibrium, then with no government intervention, it should follow that, the nominal interest rate differential will approximately equal the anticipated inflation rate differential.

Mathematically presented as:

$$\frac{1 + r_h}{1 + r_f} = \frac{1 + i_h}{1 + i_f}$$

Where, r_f and r_h are nominal home and foreign currency interest rates, respectively.

If r_f and i_f are relatively small, then this exact relationship can be approximated by equation:

$$r_h - r_f = i_h - i_f$$

In effect, the generalized version of the Fisher Effect says that *currencies with higher rate of inflation should bear higher interest rates than currencies with lower rates of inflation.*

Capital market integration and segmentation

Capital market integration means that real interest rates are determined by the global supply and global demand for funds. This is in contrast to capital market segmentation, where real interest rates are determined by local credit condition.

Capital market integration has homogeneous markets around the world, eroding much although apparently not all of the real interest rate differentials between comparable domestic and offshore securities and strengthening the link between assets that are denominated in different currencies but carry similar credit risks. To the extent that real interest differentials do exist, they must be due to either currency risk or some form of political risk.

4.3: THE INTERNATIONAL FISHER EFFECT (IFE)

The key to understanding the impact of relative changes in nominal interest rates among countries on the foreign exchange value of a nation's currency is to recall the implication of PPP and the Generalized Fisher Effect. PPP implies that exchange rates will move to offset changes in inflation rate differential. Thus, arise in the US inflation rate relative to those of another countries will be associated with a fall in the dollar's value. It will also be associated with a rise in the US interest rate relative to foreign interest rates combining these two conditions and the result is the International Fisher Effect

$$\frac{e_t}{e_0} = \frac{(1 + r_h)^t}{(1 + r_f)^t}$$

Where, e_t = the expected exchange rate in period t

The single period to the equation is

$$\frac{e_t}{e_0} = \frac{(1 + r_h)}{(1 + r_f)}$$

Note: the relation here to interest rate parity.

If the forward rate is an unbiased predictor of the future spot rate, that is $f_t = e_t$ then the equation becomes the interest rate parity

Example

In July, 2005, the one year interest rate is 4% on Swiss francs and 13% on US

- If the current exchange rate is $\text{sfr1}=\$0.63$. What is the expected future exchange rate in one year?
- If a change in expectations regarding future US inflation causes the expected future spot rate to rise to $\$0.70$, what should happen to US interest rate?

Soln

(a) Using the IFE to forecast U\$ and Sfr rates

$$\text{IFE} = \frac{e_t}{e_0} = \frac{(1 + r_h)}{(1 + r_f)}$$

MUHAMMAD MUSTAFA

MBA FROM UOS

$$= 0.63 (1 + 0.13)$$
$$(1 + 0.04)$$
$$= \$0.6845$$

(b) If r_{US} is the unknown US interest rate and the Swiss interest rate stayed at 4% (because there has been no change in expectation of Swiss inflation) then,

$$\frac{e_t}{e_0} = \frac{1 + r_h}{1 + r_f}$$

$$\frac{0.70}{0.63} = \frac{1 + r_h}{1 + 0.04}$$

$$r_h = 15.6\%$$

If r_f is relatively small, the approximation becomes

$$r_h - r_f = \frac{e_1 - e_0}{e_0}$$

In effect, the IFE says that, *currencies with low interest rates are expected to appreciate relative to currencies with high interest rates.*

Essentially what the IFE says is that arbitrage between financial markets in the form of international capital flows should ensure that the interest differential between any two countries is an **Unbiased Predictor** of the future change in the spot rate of exchange.

This condition does not mean, however, that the interest differential is an especially accurate predictor; it just means that prediction errors tend to cancel out over time.

4.4: INTEREST RATE PARITY

According to interest rate parity theory, the currency of the country with a lower interest rate should be at a forward premium in terms of the currency of the country with the higher rate. More specifically, in an efficient market with no transaction costs, the interest differential should be approximately equal to the forward differential. When this condition is met, the forward rate is said to be at *interest parity*, and equilibrium prevails in the money markets.

Interest parity ensures that the return on a hedged (or covered) foreign investment will adjust equal the domestic interest rate on investments of identical risk, thereby eliminating the possibility of having a money machine. When this condition holds, the *covered interest differential*- the difference between the domestic interest rate and the hedged foreign rate is zero. If the covered interest differential between two money markets is nonzero, there is an arbitrage incentive to move money from one market to the other.

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.

$$F - S = i_h - i_f$$

In fact, the forward discount or premium is closely related to the interest differential between the two currencies.

INTEREST RATE ARBITRAGE

The objective of interest arbitrage is to allocate funds between financial centers in response to interest rate differentials and so realize the highest possible rate of return. If for example 90 day interest rates are higher in New York than in London, it may be worthwhile to transfer short term funds from London to New York. To do so they will have to convert pounds into dollars at the spot rate and at the same time they can avoid the foreign exchange risk by arranging to convert the proceeds of the investment back into pounds at the forward rate. It follows that whether or not this transaction is worthwhile depends on the interest rate differentials between the two financial centers and the difference between the 90 day forward rate and the spot rate.

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, and then investors would:

- (a) Borrow in the currency with the lower rate
- (b) Convert the cash at spot rates
- (c) Enter into a forward contract to convert the cash plus the expected interest at the same rate
- (d) Invest the money at the higher rate
- (e) Convert back through the forward contract
- (f) Repay the principal and the interest; knowing the latter will be less than the interest received.

Therefore, we can expect interest rate parity to apply. However, there is evidence of forward rate bias.

Covered interest rate arbitrage

The covered interest arbitrage relationship can be stated formally. Let e_0 be the current spot rate (home currency value of one unit of foreign currency) and f_1 the end of period forward rate. If r_h and r_f are the prevailing interest rates in New York (home) and say, London (foreign) respectively, then one dollar (home currency unit) invested in home (New York) will yield $1 + r_h$ at the end of period; the same dollar (home currency) invested in London (foreign) will be worth $(1 + r_f) f_1 / e_0$ dollars (home currencies) at maturity. This latter result can be seen as follows:

One dollar (HC) will convert into $1/e_0$ pounds (FC) that, when invested at r_f will yield $(1 + r_f)/e_0$ pounds at the end of the period. By selling the proceeds forward today, this amount will be worth $(1 + r_f) / e_0$ dollars (HC) when the investment matures.

It can be seen that funds will flow from New York to London if and only if

$$1 + r_h < (1 + r_f) f_1 / e_o$$

Conversely, funds will flow from London to New York if and only if

$$1 + r_h > (1 + r_f) f_1 / e_o$$

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

$$r_{\text{£}} = r_{\text{§}} + f$$

Where f is the forward premium:

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

Interest rate parity holds when there are no covered interest arbitrage opportunities.

Based on the previous discussion, this no-arbitrage condition can be stated as follows:

$$1 + r_h / (1 + r_f) = f_1 / e_o$$

Illustration

Using IRP to calculate the \$/Yen Forward rate: The interest rate in the United States is 10% , in Japan the comparable rate is 7%. The spot rate for the yen is \$0.003800. if interest rate parity holds, what is the 90-day forward rate?

Solution

$$F_{90} = \$0.003800 [(1 + 0.10/4) / (1 + 0.07/4)] \\ = \mathbf{\$0.003828}$$

in other words , the 90-day forward Japanese yen should be selling at an annualized premium of about 2.95% (4 x 0.0000/0.0038).

Interest rate parity is often approximated by equation: $r_h - r_f = (f_1 - e_o) / e_o$

In effect interest rate parity says that *high interest rates on a currency are offset by forward discounts and that low interest rates are offset by forward premiums*

Example on covered arbitrage

Suppose the interest rate on pounds sterling is 12% in London, and the interest rate on a comparable dollar investment in New York is 7%. The pound spot rate is \$1.75 and the one – year forward rate is \$1.68. These rates imply a forward discount on sterling of 4% [(1.68-1.75)/1.75] and a covered yield on sterling approximately equal to 8% (12%- 4%). Since there is a covered interest differential in favour of

London, funds will flow from New York to London. This movement of money to take advantage of covered interest differential is known as *covered interest arbitrage*.

To illustrate the profits associated with covered interest arbitrage, let us assume that the borrowing and lending rates are identical and the bid-ask spread in the spot and forward markets is zero. Here are the steps the arbitrageur can take to profit from the discrepancy in rates based on a \$1 million transaction.

Specifically, the arbitrageur will

- Borrow \$1,000,000 in New York at an interest of 7%. This means that at the end of one year, the arbitrageur must repay principal plus interest of \$1,070,000
- Immediately convert \$1,000,000 to pounds at the spot rate of £1 = \$1.75. This yields £571,428.57 available for investment.
- Invest the principal of £571,428.57 in London at 12% for one year. at the end of the year, the arbitrageur will have £640,000
- Simultaneously with the other transactions, sell the £640,000 in principal plus interest forward at a rate of £1=\$1.68 for delivery in one year. This transaction will yield \$1,075,200 next year
- At the end of the year, collect the £640,000, deliver it to the bank's foreign exchange department in return for \$1,075,200, and use \$1,070,000 to repay the loan. The arbitrageur will earn \$5,200 on this set of transactions.

The transactions associated with covered interest arbitrage will affect prices in both the money and foreign exchange markets. As pounds are bought spot and sold forward, boosting the spot rate and lowering the forward rate, the forward discount will tend to widen. Simultaneously, as money flows from New York, interest rates there will tend to increase, at the same time, inflow of funds to London will depress interest rates there. The process of covered interest arbitrage will continue until interest parity is achieved, unless there is government interference.

If this process is interfered with, covered interest differentials between national money markets will not be arbitrated away. Interference always occurs since many governments regulate and restrict flows of capital across their borders. Moreover, just the risk of controls will be sufficient to yield prolonged deviations from interest rate parity.

Uncovered interest arbitrage

Uncovered interest arbitrage is a similar strategy to covered interest rate parity. The difference is that the currency risk is not hedged, so it is not a true arbitrage strategy.

The usual strategy is simple:

Suppose the risk free rate for currency B is higher than that for currency A, and that the difference in interest rates is greater than the expected depreciation of currency B against currency A (both over the same period).

- Sell currency A and buy B.
- Invest the amount of B bought in risk free securities.
- When the securities mature convert the holding of B back to A.

If currency A is borrowed, then this is called a **carry trade** (because the interest on the borrowed amount is a carrying cost).

Although this is not true arbitrage, it is a strategy that should usually make a profit over the risk free rate, provided the *average* error in the forecasts is small. Conversely, given that such profits should not so easily be come by, it can be used to derive an interest rate parity relationship.

If an uncovered interest arbitrage trade makes a profit it implies either:

- Covered interest arbitrage will also make a profit. The market should rapidly correct to eliminate an arbitrage opportunity, or
- The trader using the uncovered interest arbitrage strategy has better forecasts than the market

While the latter may appear to be almost as unlikely as the former, it is not in fact unlikely given the evidence for forward rate bias.

Uncovered interest rate parity is the interest rate parity relationship that can be derived by assuming that uncovered interest rate arbitrage opportunities will be corrected by the market

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

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

Where $E[\Delta S]$ is the expected change in 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, but this paper finds evidence that it applies in the long-term, although there are short-term deviation from it.

Inwards interest rate arbitrage

A form of arbitrage involving rearranging a bank's cash by borrowing from the interbank market, and re-depositing the borrowed money locally at a higher interest rate. The bank will make money on the spread between the interest rate on the local currency, and the interest rate on the borrowed currency

Inward arbitrage works because it allows the bank to borrow at a cheaper rate than it could in the local currency market. For example, assume an American bank goes to the interbank market to borrow at the lower Eurodollar rate, and then deposits those

Eurodollars at a bank within the US. The larger the spread, the more money that can be made.

Outward interest rate arbitrage

A form of arbitrage involving, the rearrangement of a bank's cash by taking its local currency, and depositing it into euro banks. The interest rate will be higher in the interbank market, which will enable the bank to earn more on the interest it receives for the use of its cash.

Outward arbitrage works because it allows the bank to lend for more abroad than it could in the local market. For example, assume an American bank goes to the interbank market to lend at the higher Eurodollar rate. Money will be shifted from an American bank's branch within the U.S. to a branch located outside of the U.S. The bank will earn revenues on the spread between the two interest rates. The larger the spread, the more money will be made

Mega Lecture

TOPIC 5: MARKET EFFICIENCY, EXCHANGE RATE FORECASTING AND DETERMINATION

5.1: MARKET EFFICIENCY HYPOTHESIS

An efficiency market is one in which the prices of traded securities readily incorporate new information. Numerous studies of foreign capital markets have shown that traded securities are correctly priced in that trading rules based on past prices or publicly available information cannot consistently lead to profit (after adjusting for transactions cost) in excess of those due solely to risk trading.

Features of efficiency capital market

The capital market can be judged on three measurement or features:-

(a) **Operational efficiency**- transaction costs in the market should be low and trading should be quickly effected. The low transaction costs and low brokerage fees will encourage a greater volume of shares dealing and should help to encourage allocate efficiency.

(b) **Pricing efficiency**:- this is also termed as efficiency at processing information.

The prices of capital market securities fully and fairly reflect all information concerning past events and all events the market expects to occur in the future. This is so, because even investors who do not have access to information can be confident that when they buy or sell quoted securities, they do so at a fair price.

If the market is relatively slow at reflecting new information then some investors who have access to the information will gain at the expense of those who do not have.

(c) **Allocation efficiency**

This means the capital market through the medium of pricing efficiency, allocates funds to where they can best be used. A market shows allocative efficiency if it channels savings towards those firms, which are most productive.

Forms/ levels of market efficiency

To explore the meaning of information processing efficiency further we need to examine three cases of so called efficiency market hypothesis:

(a) **Weak form efficiency.**

This states that all information contained in historical prices and firm characteristics (such as size, book value etc.) is incorporated in the actual (current) price. All **historical information** is thus reflected in the observed market price.

Current share price reflect all information about previous share prices. Knowledge of the previous price is of no help in predicting future prices i.e. Chartism is not helpful. It is not possible to make abnormal returns by studying past. Share price movement can't be made by technical analysis.

Notice that, no claim is made about the inclusion of any other type of information, nor about the speed with which information is incorporated in asset prices.

(b) The semi-strong form of efficiency.

This includes the history of past prices as well as all **publicly available information** about assets' returns, i.e. all disclosures, announcements and reports which are available to all market participants. All such information is reflected in the current price.

This postulates that current share prices fully reflect not only historical information but also all other publicly available information. Consequently it should be impossible to make consistent abnormal gains by examining public information such as published accounts, dividends declaration, and public statements by directors.

(c) The strong form of efficiency

In addition to the above, the strong form of the EMH also includes all **privately available** information on the assets, i.e. information proprietary to particular analysts and managers. The most common such information is private forecasts of asset returns.

This postulates that current share prices fully reflect all information public and private. If this form of hypothesis is true, then share prices should not change when private information is made public and it should be impossible to make consistent abnormal gains by dealing on the basis of inside information.

Insider dealing which is illegal in many countries is according to this version of the hypothesis, unlike to benefit the investor anyway.

Importance of efficiency market hypothesis

Most decision models in financial market assume the existence of a perfect market but a perfect capital market is a theoretical abstraction and does not exist in the real world. However, if capital markets are nearly perfect most of the models will have practical significance.

Since each information set is a proper subset of the next one, the strong EMH clearly implies the semi-strong EMH, and in turn the semi-strong form implies the weak form, but not vice versa. A key testable implication of all three forms of the EMH is that investors, trading on the respective information set, should **be unable to realize average excess returns above the normal rate**. For the weak form applied to the stock market, the information set includes the past history of stock prices as well as companies' general characteristics and seasonal (timing) effects. The latter clearly should not have a persistent impact if markets are efficient:

Implications of the efficient market hypothesis

What are the implications for an investor of the stock market being efficient?

- Paying for investment research serves no purpose
- Studying published accounts and stock market tips will not generate abnormal gains.
- There are no bargains to be found in efficient stock exchange.

2. What are the implications for a company and its managers of the stock market being efficient?

- An efficient market correctly reflects the value of a company and expectations.
- Cosmetic manipulation of accounting information whether through window dressing of financial statement or by massaging Earning per share (EPS) will not mislead the market.
- The timing of new issues of shares and right issues is not important, since capital market securities are never under priced.

Indeed, if all available information is already reflected in the current price, then no particular bit of information can be used to predict future price movements. This general principle applies to the two extreme types of investment analysis, **fundamental** and **technical analysis**, as well as to all intermediate types. Fundamental analysts focus on analyzing the evolution of assets' fundamentals in order to predict their value. In the context of the stock market, this includes reports of earnings, P/E ratios, dividends, etc. In the context of FX markets, this includes all macroeconomic developments and statistics which are considered to have an influence on nominal and real exchange rate dynamics.

Most of this information is in the public domain and so belongs to the information set of semi-strong EMH. In contrast, technical analysts analyze the past history of prices (included in the weak form of the EMH), aiming to discover empirical regularities (trends, patterns etc.) which will allow them to predict future price movements.

Therefore, although research of both types is essential in order for the information to get incorporated into prices--e.g., a positive reevaluation by a consensus of market analysts of a firm's future value after a good earnings forecast leads to a rise in its share price--the results of this research should not yield consistently higher returns over the market average. It should be clear that empirical support for the returns' unpredictability proposition depends crucially (a) on the particular definition of 'market average', and (b) on the *speed* with which new information is incorporated in market prices. None of these two aspects are explicitly addressed by the EMH, but they have a direct impact on the measurements of excess returns.

5.2: EXCHANGE RATE FORECASTING

International transactions are usually settled in the near future. Exchange rate forecasts are necessary to evaluate the foreign denominated cash flows involved in international transactions. Thus, exchange rate forecasting is very important to evaluate the benefits and risks attached to the international business environment.

Why firms forecast exchange rates/the need for exchange rate forecasting

Virtually every operation of an MNC can be influenced by changes in exchange rates. Several corporate functions for which exchange rate forecast are necessary follow: -

(i) Hedging decision

MNCs are constantly confronted with the decision of whether to hedge future payables and receivables in currencies

(ii) Short-term financing decision

When large corporations borrow, they have access to several different currencies. The currencies they borrow will ideally exhibit a low interest rate and weak in value over the financing period.

(iii) Capital budgeting decision

When an MNC attempts to determine whether to establish a subsidiary in a given country, a capital budgeting analysis is conducted. Forecasts of the future cash flows used within the capital budgeting process will be dependent on future currency values.

(iv) Long-term financing decision

Corporations that issue bonds to secure long-term funds may consider denominating the bonds in foreign currencies. As with short term financing, corporations would prefer the currency borrowed (denominating the debt) to depreciate over time against the currency they are receiving from sales.

To estimate the costs of issuing bonds denominating in foreign currency, forecast of exchange rates are required.

(v) Earning assessment

When earnings of an MNC are reported, subsidiary earnings are consolidated and translated into the currency representing the parent firm's home country. For example, consider an MNC with its home office in United States and subsidiaries in Switzerland and Great Britain. The Swiss subsidiary's earnings in Swiss francs must be measured by translation to U.S dollars.

APPROACHES TO FORECASTING EXCHANGE RATES

The numerous methods available for forecasting exchange rates can be categorized into four general groups:- Fundamental approach, Technical approach, Market-based approach and Mixed approach.

There are two pure approaches to forecasting foreign exchange rates:

- (1) The fundamental approach.
- (2) The technical approach

(i) Fundamental forecasting Approach

The *fundamental approach* is based on a wide range of data regarded as *fundamental* economic variables that determine exchange rates. These fundamental economic variables are taken from economic models. Usually included variables are GNP, consumption, trade balance, inflation rates, interest rates, unemployment, productivity indexes, etc. In general, the fundamental forecast is based on structural (equilibrium) models. These structural models are then modified to take into account statistical characteristics of the data and the experience of the forecasters. It is a mixture of art and science.

Fundamental forecasting is based on fundamental relationships between economic variables and exchange rates. Given current values of these variables along with their historical impact on currency's value, corporations can develop exchange rate projections.

For example, high inflation in a given country can lead to depreciation in the currency representing that country. Of course, all other factors that may influence exchange rates should also be considered.

A forecast may arise simply from a subjective assessment of the degree to which general movement in economic variables in one country are expected to affect exchange rates. From a statistical perspective, a forecast would be based on quantitatively measured impacts of factors on exchange rates.

In brief, the fundamental analysis is the most common approach to forecasting future exchange rates. It relies on painstaking examination of the macroeconomics variables and policies that are likely to influence a currency's prospects. The variables examined include relative inflation and interest rates, national income growth and changes in money supplies. The interpretation of these variables and their implications for future exchange rates depend on the analyst's model of exchange rate determination

The simplest form of fundamental analysis involves the use of purchasing power parity. We have previously seen the value of PPP in explaining exchange rate changes. Its application in currency forecasting is straightforward.

Fundamental Approach: Forecasting at Work

Practitioners use the fundamental approach to generate equilibrium exchange rates. The equilibrium exchange rates can be used for projections or to generate trading signals. A trading signal can be generated every time there is a significant difference between the forecasted exchange rate and the exchange rate observed in the market. If there is a significant difference between the forecast rate and the actual rate, the practitioner should decide if the difference is due to a mispricing or a heightened risk premium. If the practitioner decides the difference is due to mispricing, then a buy or sell signal is generated.

There are two kinds of forecasts: *in sample* and *out-of-sample*. The first type of forecasts works within the sample at hand, while the latter works outside the sample.

In-sample forecasting does not attempt to forecast the future path of one or several economic variables.

In-sample forecasting uses today's information to forecast what today's spot rates should be. That is, we generate a forecast within the sample (*in-sample*). The fitted values estimated in a regression are in-sample forecasts. The fundamental approach generates an equilibrium exchange rate.

The foreign exchange rate in-sample fundamental forecasts are interpreted as equilibrium exchange rates. Equilibrium exchange rates can be used to generate trading signals. On the other hand, out-of sample forecasting attempts to use today's information to forecast the future

behavior of exchange rates. That is, we forecast the path of exchange rates outside of our sample. In general, at time t , it is very unlikely that we know the inflation rate for time $t+1$. That is, in order to generate out-of-sample forecasts, it will be necessary to make some assumptions about the future behavior of the fundamental variables.

Fundamental Approach: Evidence

An MNC that forecast exchange rate must monitor its performance over time to determine whether the forecasting procedure is satisfactory, for this purpose a measurement of the forecast error is required.

In 1979 Richard Levich, from New York University, made a comparison of the forecasting performance of several models for the magazine *Euro money*. Levich studied the forecasting performance of various services relative to the forward rate. The forward rate is a free, observable forecast. A good forecaster has to beat the forward rate.

What are the ways of computing forecast error?

There are several ways to compute forecast errors

Let $SF_{j,i}$ be the forecasting service j 's forecasted exchange rate for time $t=i$ and S_i the realized exchange rate at time $t=i$. Let F_i denote the forward rate for time $t=i$.

Levich compared the mean absolute error (MAE) of the forecasting service and the forward market, defined as: -

$$MAEFS_j = \{|SF_{j,1}-S_1| + |SF_{j,2}-S_2| + \dots + |SF_{j,n}-S_n|\} \times (1/n),$$

$$MAEFM = \{|F_1-S_1| + |F_2-S_2| + \dots + |F_n-S_n|\} \times (1/n).$$

For the sample period 1977-1980 and for twelve major forecasting services, Levich compared the percentage of times the services did better than the forward market that is $MAEFS < MAEFM$. The results were:

Time Horizon	% Of Observations with $MAEFS < MAEFM$
1 month	28.8%
3 months	24.0%
6 months	28.8%
12 months	32.7%

In terms of mean absolute error, on average the forecasting services underperformed the forward rate more than two-thirds of the time. Since observation of the forward rate is free and since, as mentioned above, the forward rate is not an unbiased forecast of the future spot rate, these results suggest that paying a forecasting service might not be a wise expense. However, Levich

found that forecasting services have some ability to predict whether the future spot rate will be greater than or smaller than the current forward rate. For some investors the *direction* of the forecast maybe as important as the absolute or squared error.

Absolute forecast error
(As percentage of realized value)

$$\frac{\text{Forecast value} - \text{realized value}}{\text{Realized value}} \times 100\%$$

Example: Suppose the current one-month forward rate is 0.7335 USD/CAD and the forecast for the future spot rate is 0.7342 USD/CAD. Based on this forecast, Ms. Sternin, a U.S. speculator, decides to buy CAD forward. Suppose that the CAD appreciates to 0.7390 USD/CAD. Then the (absolute) size of the forecast error in this case is $0.7390 - 0.7342 = 0.0048$ USD/CAD. Ms. Sternin would not be unhappy with the forecasting error, since she made a profit of $0.7390 - 0.7335 = 0.055$ USD/CAD.

On the other hand, suppose that the CAD depreciates to 0.7315 USD/CAD. Now, the direction of the forecast (relative to the forward rate) was wrong. Ms. Sternin would have lost $0.7315 - 0.7335 = -0.0020$ USD/CAD. The (absolute) size of the error, however, was $|0.7315 - 0.7342| = 0.0027$ USD/CAD. Therefore, Ms. Sternin might prefer to have a forecast that is correct in direction, and might not care about the MAE.

The error is computed using an absolute value, since this avoids a possible offsetting effect when determining the mean forecast error (mfe). For example, consider a simple example, in which the forecast error is 0.005 in the first period and -0.05 in the second period (if absolute value not taken)

The mean error here over the two periods is zero. Yet that is misleading, since the forecast was not perfectly accurate in either period. Absolute value avoids such distortion.

In 1980, Levich tested the number of times a profit is made from taking advantage of the direction forecasted by some forecasting services. He found that some forecasting services were able to correctly predict the direction more than 50 percent of the time. In 1982 and 1983, Levich repeated the same study and found that the forecasting services that performed well in 1980 were not the same as those that did well in the updated study. Therefore, it seems that it is very difficult to consistently predict the future spot rate relative to the forward rate.

Forecasting exchange rates is very difficult. As mentioned above, forward rates are poor predictors of future spot rates. Forecasting services on average have a difficult time just beating the forward rate. The random walk tends to outperform the other foreign exchange rate models. Paraphrasing a popular American TV show of the fifties and early sixties, we can say: "***Doris Day knows best.***"

Limitations of Fundamental Forecasting

While fundamental forecasting accounts for the expected fundamental relationships between factors and currency values, the following limitations exist: -

- (i) Uncertain timing of impact: The precise timing of the impact of some factors on a currency's value is not known. It is possible that the impact of inflation on exchange rates will not completely occur until two, three or four quarters later. The regression model would need to be adjusted accordingly.
- (ii) Forecasts needed for factors with instantaneous impact
- (iii) Omission of other relevant factors from the model e.g. exporting firms experiencing an unanticipated labor strike, causing shortages; this would reduce demand for foreign currency.
- (iv) Change in sensitivity of currency movement to each factor over time. A coefficients derived from the regression analysis will not necessarily remain constant over time

Use of purchasing power parity for fundamental forecasting

Recall that, the theory of Purchasing Power Parity (PPP) specifies the fundamental relationship between the inflation differential and the exchange rate. In simple terms, PPP states that the currency of the relatively inflated country will depreciate by an amount that reflects that country's inflation differential.

If this theory were accurate in reality, there would not be a need to even consider alternative forecasting techniques. However using the inflation differential of two countries to forecast their exchange rate is not always accurate.

Illustration

Using PPP to forecast the future spot rate, the U.S inflation rate is expected to average about 4% annually, while the Spanish rate of inflation is expected to average about 9% annually. If the current spot rate for the Peseta is \$0.008. What is the expected spot rate is two years?

Soln

$$e_1 = e_0 \frac{(1 + i_h)^t}{(1 + i_f)^t}$$

$$e_2 = \$0.008 \times (1.04/1.09)^2 \\ = \$0.00728$$

Why is it that the exchange rate as a forecast is not always accurate?

(ii) The Technical Approach

The *technical approach* (TA) focuses on a smaller subset of the available data. In general, it is based on price information. The analysis is "technical" in the sense that it does not rely on a fundamental analysis of the underlying economic determinants of exchange rates or asset prices, but only on extrapolations of past price trends. Technical analysis looks for the repetition of specific price patterns. Technical analysis is an art, not a science.

Computer models attempt to detect both major trends and critical, or turning, points. These turning points are used to generate trading signals: buy or sell signals.

The most popular TA models are simple and rely on filters, moving averages (MA), or momentum indicators.

Technical analysis is the antithesis of fundamental analysis in that it focuses exclusively on past price and volume movements, while totally ignoring economic and political factors to forecast currency winners and losers. Success depends on whether technical analysts can discover price patterns that repeat themselves and are, therefore, useful for forecasting.

There are two primary methods of technical analysis: - **charting and trend analysis**.

Chartists examine bar charts or use more sophisticated computer –based extrapolation techniques to find recurring price patterns.

They then issue buy or sell recommendations if prices diverge from their past pattern.

Trend following systems seek to identify prices trends via various mathematical computations.

Technical forecasting models have helped some speculators in the foreign exchange market at various times.

Many foreign exchange participants argue that even if a particular technical forecasting model is shown to lead consistently to speculative profits, it will no longer be useful once other participants begin to use it. The trading based on its recommendation would push the currency value to a new position immediately.

The possibility that either fundamental or technical analysis can be used to profitably forecast exchange rates is inconsistent with the efficient market hypothesis, which says that, current exchange rates reflect all publicly available information. Because markets are forward looking,

exchange rates will fluctuate randomly as market participants assess and then react to new information much as security and commodity prices in other asset markets respond to news.

Technical Analysis Models

(1) This is probably the most popular TA model. It is based on the finding that asset prices show significant small autocorrelations. If price increases tend to be followed by increases and price decreases tend to be followed by decreases, trading signals can be used to profit from this autocorrelation. The key of the system relies on determining when exchange rates start to show significant changes, as opposed to irrelevant noisy changes. Filter methods generate buy signals when an exchange rate raises X percent (the filter) above its most recent trough, and sell signals when it falls X percent below the previous peak. Again, the idea is to smooth (filter) daily fluctuations in order to detect lasting trends. The filter size, X, is typically between 0.5% and 2.0%.

Note that there is a trade-off between the size of the filter and transaction costs. Low filter values, say 0.5%, generate more trades than a large filter, and say 2%. Thus, low filters are more expensive than large filters. Large filters, however, can miss the beginning of trends and then be less profitable.

(2) The goal of a MA model is to smooth erratic daily swings of asset prices in order to signal major trends. A MA is simply an average of past prices. If we include the most recent past prices, then we calculate a short-run MA (SRMA). If we include a longer series of past prices, then we calculate a long-term MA (LRMA). The *double MA system* uses two moving averages: a LRMA and a SRMA. A LRMA will always lag a SRMA because it gives a smaller weight to recent movements of exchange rates.

In MA models, buy and sell signals are usually triggered when a SRMA of past rates crosses a LRMA.

For example, if a currency is moving downward, its SRMA will be below its LRMA. When it starts rising again, it soon crosses its LRMA, generating a buy signal.

(3) Momentum models determine the strength of an asset by examining the change in velocity of the movements of asset prices. If an asset price climbs at increasing speed, a buy signal is issued.

These models monitor the derivative (slope) of a time series graph. Signals are generated when the slope varies significantly. There is a great deal of discretionary judgment in these models. Signals are sensitive to alterations in the filters used, the period length used to compute MA models and the method used to compute rates of change in momentum.

Looking Ahead: Exchange Rate Volatility

We have seen that exchange rates are very difficult to forecast. This difficulty makes it difficult to estimate the future value assets and liabilities denominated in foreign currency. In finance, uncertainty about the value of securities creates risk. Many financial models associate the variance of an asset with an asset's riskiness. Investors require higher rates of return for riskier assets. The volatility of an asset is also important in other fields of finance. For example, option-pricing formulas use as a vital input an estimate for the variance.

Thus, exchange rate movement are unpredictable, otherwise, it would be possible to earn arbitrage profits.

Please read:

- Forecasting floating exchange rates
- Forecasting fixed exchange rates
- Basic forecasting models (econometric, time series and combination of methods)

EXCHANGE RATE DETERMINATION

Exchange rate volatility can be damaging for international trade if: -

- (i) A country has a currency that is depreciating in value; the cost of its imports will rise in terms of its domestic currency. If the country is heavily dependent on imports (for example, Tanzania), this could have the effect of increasing the rate of inflation and so weakening the economy
- (ii) A country has a currency that is rising in value; its exports will become more expensive for foreign buyers. Its export trade is therefore likely to suffer. For example, this has been the experience of German in 2002-2003
- (iii) Multinational companies face the problems of making profits when its operations are spread across different countries and different currencies. Exchange rate volatility creates problems for strategic planning, such as decision about where to site production operations.

This looks at how exchange rates might be determined. Two broad themes are considered:-

- The economic factors that affect exchange rates, particularly comparative rates of inflation between different countries and comparative interest rates between different currencies.
- Measures taken by governments to achieve exchange rate stability, such as the creation of currency blocs and currency zones, and for some developing countries establishing a currency board.

1. The changes in exchange rates

Measuring the size of changes in exchange rates is complicated because there is no fixed standard by which currency values can be measured. It is possible for a currency to appreciate relative to another currency while depreciating against others. In the case of sterling, the exchange rate is normally measured against three benchmarks:

- US dollar: Most FX deals in sterling are in exchange for US\$ and some international trade (e.g. in oil) is conducted exclusively in US\$. The $\text{€}/\text{\$}$ rate is therefore of central importance to the UK economy
- Euro: similarly, the euro is an important currency for the UK. Much of the UK's international trade is with countries in the euro zone. If the UK eventually joins the euro system, the exchange rate at which sterling enters will be extremely important for the national economy.
- A basket of other currencies: Sterling's exchange rate against a series of currencies, weighted according to pattern of UK trade will give a useful indicator of the average exchange rate for sterling with other currencies as a whole. This clearly has to be shown as an index not as a rate and hence it shows changes in exchange rates not the rate itself.

Changes in exchange rates result from changes in the demand for and supply of the currency. These changes may occur for a variety of reason:-

- Since currencies are required to finance international trade, changes in trade may lead to changes in exchanges rates. In principle:
 - Demand for imports in Tanzania represents a demand for foreign currency or a supply of Tanzanian shillings
 - Overseas demand for Tz exports represents a demand for Tshs or a supply of the currency.

Thus a country with a current account deficit where imports exceed exports may expect to see its exchange rate depreciate since the supply of the currency (imports) will exceed the demand for the currency (export). Thus any factors, which are likely to alter the state of the current account of the balance of payments, may ultimately affect the exchange rate.

- There are also capital movements between economies. These transactions are effectively switching bank

TOPIC 6: CORPORATE FOREIGN EXCHANGE RISK MANAGEMENT

OVERVIEW OF THE CHAPTER

(a) Goals of the chapter

Exchange risk is the effect that unanticipated exchange rate changes have on the value of the firm. This chapter explores the impact of currency fluctuations on cash flows, on assets and liabilities, and on the real business of the firm. Three questions must be asked. First, what exchange risk does the firm face, and what methods are available to measure currency exposure? Second, 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? And finally, which of the various tools and techniques of the foreign exchange market should be employed: debt and assets; forwards and futures; and options. The chapter concludes by suggesting a framework that can be used to match the instrument to the problem.

6.1 CORPORATE EXPOSURE MANAGEMENT

RISK-It is a possibility of an event to happen, which will negatively affect the business operations or results.

EXPOSURE- Means being in a position where if the risk be in adverse side, it may hurt the one exposed to it. It is being open to risk.

The general concept of exposure refers to the degree to which a company is affected by exchange rate changes.

The two terms, risk and exposure are some times used interchangeably

RISK MANAGEMENT PROCESS- is the process, which integrates identification of risk, developing strategies to manage it, choosing the hedging tool and hedge the risk.

Identification of risk can start with the source of problems, or with the problem itself, i.e. know the risk facing the business

➤ **Quantification/ Assessment.**

Risk must be assessed as to their potential severity of loss and to the probability occurrence. These quantities can be either simple to measure or impossible to know for sure in the case of probability of an unlikely event occurring.

➤ **Developing Strategies include;**

- Risk Avoidance (elimination)-includes not performing an activity that could carry risk. Its advantage is that it is the answer to all risks. But avoiding risks means losing out on the potential gain that accepting the risk may have allowed. E.g. profits.
- Risk Reduction (mitigation)-involves methods that reduce the severity of loss.
- Risk Retention (accepting) - involves accepting the loss when it occurs. Risk retention is viable strategy for small risks where the cost of hedging the risk would be greater over time than the total losses sustained.
- Risk Transfer- means causing another party to accept the risk, *typically contract or by hedging*, e.g. insurance, forward contracts and outsourcing.

➤ **Choosing the hedging Tool**

Hedging means taking steps to protect the business against expected loss. E.g. lagging, forward contracts, swaps, futures, options etc.

➤ **Hedge the Risk**- apply any of the tool to hedge the position.

Note: Hedging in the context of exchange rates variations, means taking steps to protect the business against expected loss due to exchange rates variation.

OBJECTIVE OF THE HEDGING POLICY

- The goal of any hedging policy should be to the corporation achieve optimal risk profile that balances the benefits of protection against the costs of hedging.
- A well-designed hedging policy reduces both risks and costs. Hedging frees up resources and allows management to focus on the aspects of business in which it has a competitive advantage by minimizing the risks that are not central to the basic business.
- Hedging increases shareholders value by reducing the cost of capital and stabilizing earnings.

6.2: FOREIGN EXCHANGE RISK MANAGEMENT

What is exchange risk?

Exchange risk is simple in concept: a potential gain or loss that occurs as a result of an exchange rate change. For example, if an individual owns a share in Hitachi, the Japanese company, he or she will lose if the value of the yen drops.

Yet from this simple question several more arise. First, whose gain or loss? Clearly not just those of a subsidiary, for they may be offset by positions taken elsewhere in the firm. And not

just gains or losses on current transactions, for the firm's value consists of anticipated future cash flows as well as currently contracted ones. What counts, modern finance tells us, is shareholder value; yet the impact of any given currency change on shareholder value is difficult to assess, so proxies have to be used. The academic evidence linking exchange rate changes to stock prices is weak.

Moreover the shareholder who has a diversified portfolio may find that the negative effect of exchange rate changes on one firm is offset by gains in other firms; in other words, that exchange risk is diversifiable. If it is, then perhaps it's a non-risk.

Finally, risk is not risk if it is anticipated. In most currencies there are futures or forward exchange contracts whose prices give firms an indication of where the market expects currencies to go. And these contracts offer the ability to lock in the anticipated change. So perhaps a better concept of exchange risk is *unanticipated* exchange rate changes.

These and other issues justify a closer look at this area of international finance.

Hence foreign exchange risk management refers to what are the policies of management in as far as risks are concerned.

The exposure to exchange rate is rooted by the development of international trade since such trade requires the use of foreign currency. Because international trade involves the use of foreign exchange, there is an additional problem of currency risk. Currency risk arises if there are changes in the exchange rate between currencies. In a world of fixed exchange rates, there is minimal currency risk for companies engaged in international trade. In these circumstances the future exchange rate between the currencies is known and hence the determination of contract price is straightforward and there is no risk of financial loss when payment is due. However, if exchange rates are floating there is the possibility of financial loss when payment is made for exporter if the contract is in the purchaser's currency and domestic currency depreciates relative to it.

The strategies adopted by management to deal with risks facing the business, in which case management may decide:

- To reduce certain risk
- To completely eliminate certain risk
- To remain silent not doing a thing against a risk facing the business, in this case expecting to benefit from the risk taking position

SHOULD FIRMS MANAGE FOREIGN EXCHANGE RISK?

Many firms refrain from active management of their foreign exchange exposure, even though they understand that exchange rate fluctuations can affect their earnings and value. They make this decision for a number of reasons.

First, management does not understand it. They consider any use of risk management tools, such as forwards, futures and options, as speculative. Or they argue that such financial manipulations lie outside the firm's field of expertise. "We are in the business of manufacturing slot machines, and we should not be gambling on currencies." Perhaps they are right to fear abuses of hedging techniques, but refusing to use forwards and other instruments may expose the firm to substantial speculative risks.

Second, they claim that exposure cannot be measured. They are right -- currency exposure is complex and can seldom be gauged with precision. But as in many business situations, imprecision should not be taken as an excuse for indecision.

Third, they say that the firm *is* hedged. All transactions such as imports or exports are covered, and foreign subsidiaries finance in local currencies. This ignores the fact that the bulk of the firm's value comes from transactions not yet completed, so that transactions hedging is a very incomplete strategy.

Fourth, they say that the firm does not have any exchange risk because it does all its business in dollars (or yen, or whatever the home currency is). But a moment's thought will make it evident that even if you invoice German customers in dollars, when the mark drops your prices will have to adjust or you'll be undercut by local competitors. So revenues are influenced by currency changes.

Finally, they assert that the balance sheet is hedged on an accounting basis--especially when the "functional currency" is held to be the dollar. The misleading signals that balance sheet exposure measure can give are documented in later sections.

But is there any *economic* justification for a "do nothing" strategy?

Modern principles of the theory of finance suggest *prima facie* that the management of corporate foreign exchange exposure may neither be an important nor a legitimate concern. It has been argued, in the tradition of the Modigliani-Miller Theorem, that the firm cannot improve shareholder value by financial manipulations: specifically, investors themselves can hedge corporate exchange exposure by taking out forward contracts in accordance with their ownership in a firm. Managers do not serve them by second-guessing what risks shareholders want to hedge.

One counter-argument is that transaction costs are typically greater for individual investors than firms. Yet there are deeper reasons why foreign exchange risk should be managed at the firm

level. As will be shown in the material that follows, the assessment of exposure to exchange rate fluctuations requires detailed estimates of the susceptibility of net cash flows to unexpected exchange rate changes (Dufey and Srinivasulu, 1983). Operating managers can make such estimates with much more precision than shareholders who typically lack the detailed knowledge of competition, markets, and the relevant technologies. Furthermore, in all but the most perfect financial markets, the firm has considerable advantages over investors in obtaining relatively inexpensive debt at home and abroad, taking maximum advantage of interest subsidies and minimizing the effect of taxes and political risk.

Another line of reasoning suggests that foreign exchange risk management does not matter because of certain equilibrium conditions in international markets for both financial and real assets. These conditions include the relationship between prices of goods in different markets, better known as Purchasing Power Parity (PPP), and between interest rates and exchange rates, usually referred to as the International Fisher Effect (as seen in previous section).

However, deviations from PPP and IFE can persist for considerable periods of time, especially at the level of the individual firm. The resulting variability of net cash flow is of significance as it can subject the firm to the costs of *financial distress*, or even default. Modern research in finance supports the reasoning that earnings fluctuations that threaten the firm's continued viability absorb management and creditors' time, entail out-of-pocket costs such as legal fees, and create a variety of operating and investment problems, including underinvestment in R&D. The same argument supports the importance of corporate exchange risk management against the claim that in equity markets it is only systematic risk that matters. To the extent that foreign exchange risk represents unsystematic risk, it can, of course, be diversified away -- provided again, that investors have the same quality of information about the firm as management -- a condition not likely to prevail in practice.

This reasoning is supported by the likely effect that exchange risk has on *taxes* paid by the firm. It is generally agreed that leverage shields the firm from taxes, because interest is tax deductible whereas dividends are not. But the extent to which a firm can increase leverage is limited by the risk and costs of bankruptcy. A riskier firm, perhaps one that does not hedge exchange risk, cannot borrow as much. It follows that anything that reduces the probability of bankruptcy allows the firm to take on greater leverage, and so pay less taxes for a given operating cash flow. If foreign exchange hedging reduces taxes, shareholders benefit from hedging.

However, there is one task that the firm cannot perform for shareholders: to the extent that individuals face unique exchange risk as a result of their different expenditure patterns, they must themselves devise appropriate hedging strategies. Corporate management of foreign exchange risk in the traditional sense is only able to protect expected *nominal* returns in the reference currency (Eaker, 1981).

IDENTIFYING EXPOSURE

The first step in management of corporate foreign exchange risk is to acknowledge that such risk does exist and that managing it is in the interest of the firm and its shareholders. The next step, however, is much more difficult: the identification of the nature and magnitude of foreign exchange exposure. In other words, identifying what is at risk, and in what way.

The focus here is on the exposure of non-financial corporations, or rather the value of their assets. This reminder is necessary because most commonly accepted notions of foreign exchange risk hedging deal with assets, i.e., they are pertinent to (simple) financial institutions where the bulk of the assets consists of (paper) assets that have with contractually fixed returns, i.e., fixed income claims, not equities. Clearly, such times your assets in the currency in which they are denominated" applies in general to banks and similar firms. Non-financial business firms, on the other hand, have, as a rule, only a relatively small proportion of their total assets in the form of receivables and other financial claims. Their core assets consist of inventories, equipment, special purpose buildings and other tangible assets, often closely related to technological capabilities that give them earnings power and thus value. Unfortunately, real assets (as compared to paper assets) are not labeled with currency signs that make foreign exchange exposure analysis easy..

The task of gauging the impact of exchange rate changes on an enterprise begins with measuring its *exposure*, that is, the amount, or value, at risk. This issue has been clouded by the fact that financial results for an enterprise tend to be compiled by methods based on the principles of accrual accounting. Unfortunately, this approach yields data that frequently differ from those relevant for business decision-making, namely future cash flows and their associated risk profiles. As a result, considerable efforts are expended -- both by decision makers as well as students of exchange risk -- to reconcile the differences between the point-in-time effects of exchange rate changes on an enterprise in terms of accounting data, referred to as *accounting* or *translation exposure*, and the ongoing cash flow effects which are referred to as *economic exposure*. Both concepts have their grounding in the fundamental concept of *transactions exposure*.

Types of Foreign Exchange Exposure

The foreign exchange risk exposure of corporate is normally broken down into three types:-

- (a) **Transaction exposure**
- (b) **Translation (accounting) exposure**
- (c) **Economic exposure**

6.3: TRANSACTION EXPOSURE MANAGEMENT

It is the degree to which the value of future cash transactions can be affected by exchange rate fluctuations. It relates to the gains and losses to be made when settlement takes place at some future date of a foreign currency denominated contract that has already been entered into. These contracts may include import or export of goods/services on credit terms, borrowing or investing funds denominated in a foreign currency, receipts of dividends from overseas or unfulfilled foreign exchange contracts.

It is the risk that amount to be received in local currency from foreign receivables may go down or amount of local currency to settle foreign payables may go up both due to unfavorable changes in exchange rate.

Transaction exposure can be protected against by adopting a hedged position- that is, entering into a counterbalancing contract to offset the exposure. This is discussed in more detail in the coming parts.

Example: U.S. firm sells its product to a German client for €1m, payable in 3 months, now faces transaction exposure since the CFs are fixed in Euros, and the future value of the Euro is uncertain, meaning that the dollars received are uncertain.

Example: U.S. firm borrows in U.K. pounds, owes £1m in one year, faces transaction exposure since the CFs are fixed in a foreign currency.

MEASUREMENT OF TRANSACTION EXPOSURE

A company has an exposure to the risk of an adverse movement in exchange rates whenever it needs to make a payment in a foreign currency at a future date, and whenever it expects to receive income in a foreign currency at a future date.

The risk arises because between now and the future date, the exchange rate might move so that:

- If payment will be made in a foreign currency, cost of buying the currency will be higher than it would be “now”, because the spot rate of the foreign currency strengthens against the corporate’s domestic currency.
- If foreign currency income will be received and exchange for the company’s domestic currency, the value of the receipt will be less than it would be “now”, because the spot rate of the currency is weakens against the company’s domestic currency.

MANAGEMENT OF TRANSACTION EXPOSURE

Businesses dislike the uncertainty and risk arising from currency exposures. For example, suppose that, the company in Tanzania incurs costs mainly in Tshs, and sells most of its output to customers in Kenya at a net profit margin of 5%. If Tshs were to strengthen in value against the Kshs, the company would find it difficult to put its prices in Kshs to its Kenyan customers, and so the Tshs revenue from its sales would fall. Relatively small rise in value in Tsh against the Kshs might wipe out the company's profits.

When currency risk is significant for a company, it should do something to either eliminate it or reduce it.

Taking measures to eliminate or reduce a risk is called hedging the risk or hedging the exposure. (Hedging refers to the idea of putting a fence around the risk to keep it restricted or confined)

A hedge can be either a 100% or a partial hedge (when not all the risk is hedged and some exposure to the risk thereof remains)

Working out the exposure and the hedge

To create a hedge, you must first of all recognize what the exposure is. The exposure should be specified in terms of its size and when it will happen.

Be clear in your mind too about whether an adverse exchange rate movement would mean the foreign currency getting stronger or weaker. Remember that if a company is expecting future income in a foreign currency, the exposure is to a fall in the value of that currency. If the company is expecting to make a payment in a foreign currency at some time in the future, exposure is to a rise in the value of that currency.

Remember too that, if it is not hedged, an exposure lasts from "now" until the time that the future receipt or payment in foreign currency occurs, but then it ceases to exist.

Example

A French company expects to pay US\$ 1 million in three months time to a foreign supplier. For the French company, the exposure is to the cost of payment of \$1 million in three months, and the risk is that the dollar will strengthen during that time against the euro.

Having established what the exposure is, we can go on to consider different ways in which it might be hedged.

Techniques of managing (hedging) transaction exposure

The following are the methods/techniques of hedging a currency transaction exposure.

1. Internal Techniques

- Invoicing in home currency
- Leading and lagging
- Multilateral netting and matching

2. External Techniques

- Forward contracts
- Money market hedges
- Currency futures
- Currency options
- Currency swaps

The last three techniques (future, options and swaps) will be dealt in detail in a later sub-topic, which is under derivative markets and derivative instruments.

(i) Invoicing in home currency: The currency of invoice decision

A company exporting goods or services has to decide whether to invoice in its own currency, the buyer's currency or another acceptable currency. For, example, a Tanzanian company exporting goods to Kenya can decide to invoice its customers in Tshs. In doing so, it avoids an exposure to a risk of fall in the value of the Kshs (which it would have if it invoiced in Kshs). The currency risk is shifted to the Kenyan customers.

Drawback to invoicing in domestic currency is that foreign customers might go to a different supplier who is willing to invoice them in their domestic currency. As always with sales-related decisions, marketing and financing arguments must be balanced.

So, although invoicing in the home currency has the advantage of eliminating exchange differences, the company is unlikely to compare well with a competitor who invoices in the buyer's currency. It is also necessary to revise prices frequently in response to currency movements, to ensure that the prices remain competitive.

Invoicing in the buyer's currency should promote sales and speed up payment and currency movements can be hedged using forward cover. However, this is only available for the world's major traded currencies.

A seller's ideal currency, in order of preference, is

- Home currency
- Currency stable relative to home currency
- Market leader's currency
- Currency with a good forward market

A seller may also have a healthy interest in a foreign currency in which there is definitely, or likely, to be future expenditure.

A buyer's ideal currency is: -

- Own currency
- Currency stable relative to own currency
- Currency other suppliers sell in (for convenience and the ease of justifying a purchase)

(ii) Leading and lagging

'Leading' and 'Lagging' are terms relating to the speed of settlement of debts.

- (a) Leading refers to an immediate payment or the granting of very short-term credit. This is beneficial to a payer whose currency (used to settle) is weakening against the payee's currency
- (b) Lagging refers to granting (or taking) of long-term credit.

It is beneficial to a payer if he is to pay payee's weakening currency.

In relation to foreign currency settlements, additional can be obtained by the use of these techniques when currency exchange rates are fluctuating (assuming one can forecast the changes)

If the settlement were in the payer's currency, then 'leading' would be beneficial to the payer if this currency were weakening against the payee's currency. 'Lagging' would be beneficial for the payer if the payer's currency were strengthening against the payee's.

If the settlement were to be made in the payee's currency, the 'lagging' would be benefit the payer when the currency is weakening against the payee's currency. 'Leading' would benefit the payer if the payee's currency were strengthening against the payer's.

Note: in either case, the payee's view would be the opposite.

(iii) Multilateral netting and matching

Matching -involves the use of receipts in particular currency to meet payment obligations in the same currency.

For example, suppose that a company expects to make payments of US\$470,000 in two months time, and also expects to receive income of US\$250,000 in two months. The company can use its income of \$250,000 to meet some of the payments of \$470,000.

This reduces to \$220,000 (i.e. 470,000-250,000) its exposure to a rise in the value of the dollar over the next two months.

Similarly, suppose that a company expects to receive €700,000 in three month's time, when it also expects to incur payments of €300,000. It can use some of its income in euros to make the payments, so that its net exposure is to income of just €400,000 (700,000-300,000).

Matching receipts and expenditures is very useful way of partially hedging currency exposures. It can be organized at group level by the treasury team, so that currency income for one subsidiary can be matched with expenditures in the same currency by another subsidiary. This is most easily managed when all subsidiaries are required to pay their income into a 'group bank account' and all payments are made out of this central account.

Successful matching, however, depends on reliable forecasts of amounts and timing of future inflow and outflows of currencies.

Netting- involves offsetting the group's debtors and creditors in the same currency and only covering the net position. This reduces the amount to be hedged by the group. For example, there is no point in one subsidiary hedging a \$1 million debt receivable at same time as another subsidiary is hedging a \$ 1 million debt payable.

If the subsidiaries use different functional currencies, a currency of conversion is agreed in which all inter- group debts are converted before canceling them to remain only with net amount to be hedged by the group.

The parent company treasury department can assess the overall group position and only cover the group's net exposure.

Example of netting

Assume a multinational company Y with subsidiaries A,B and C. netting of the Y inter-group debts payable and receivable can be arranged as follows:

Paying subsidiary	Receiving subsidiary			
	A	B	C	
A	-	200	120	320
B	210	-	350	560
C	270	300	-	570
Total receivable	480	500	470	
Less: Total payable	(320)	(560)	(570)	
Net to be covered	160	(60)	(100)	

In summary the effect of the above netting can be tabulated as follows

Subsidiary		Amount to be hedged	
		Before netting	After netting
A	Receivable	480	160
	Payable	320	-
B	Receivable	500	-
	Payable	560	60
C	Receivable	470	-
	Payable	570	100
Total	Receivable	1,450	160
	Payable	1,450	160

Before netting (if not for netting) the firm was exposed/had to cover a total amount of 2,900/= payables and receivables where each subsidiary would consider to cover its own payables and receivables independently. But after netting only 320/= remain for the group to cover by other hedging tools.

Advantages.

- Fewer transactions hence less administration and lower transaction costs
- Regular settlement hence less inter subsidiary disagreement and less exposure risk

Disadvantages

- Subsidiary loses flexibility over timing of payments and receipts i.e. affect its ability to choose advantageous exchange rates.
- Central treasury may not operate as efficiently as expected
- Inter subsidiary transactions will be affected by changes in the exchange rate of the base currency
- Taxation may adversely affect the subsidiary

Note: How ever some of the internal techniques explained above are restricted by some central banks, hence the need to consult the country's central bank before using them for their legality in the respective country.

(iv) Hedging with forward contracts (forward market hedge)

Forward contracts are an important method of hedging currency risks. This is because a forward contract can be used now to fix an exchange rate for a future receipt or payment in currency. If the exchange rate is fixed now, there is no need to worry about how the spot rate might change, because the future cash flow in domestic currency is now known with certainty.

To hedge with forward contract, we need to: -

- Establish what the future cash flow will be in the foreign currency
- Fix the rate now for buying or selling this foreign currency by entering into a forward exchange transaction with a bank

A forward contract is a binding contract on both parties. This means that having made a forward contract; a company must carry out the agreement, and buy or sell the foreign currency on the agreed date and at the rate of exchange fixed by the agreement. If the spot rate moves in the company's favor, that is too bad. By hedging against the risk of an adverse exchange rate movement with a forward contract, the company also closes any opportunity to benefit from a favorable change in the spot rate.

(a) Hedging foreign receivable

It concerns the exporters when fear a possible depreciation of the foreign currency up on exchanging the foreign currency for domestic currency.

Hedging foreign receivables involves selling the foreign currency forward, this means fixing the rate at which the foreign currency will be exchanged in the future. Specifically the process involves the following steps

- Sell the foreign currency amount forward at the forward rate/ enter forward contract
- Receive the foreign currency amount from the customer; deliver the amount to the bank in exchange for domestic currency.

(b) Hedging foreign payables

Importers would hedge foreign payable when they fear a possible appreciation of the foreign currency. It involves the purchasing of foreign currency forward.

This means fixing the exchange rate at which the customer will purchase the foreign currency. Specifically the process involves

- Purchase the foreign currency amount forward at a forward rate
- When the payment falls due deliver domestic currency amount to the bank, in exchange for foreign currency amount and pay the supplies.

Illustration.

1. The exchange rate for sterling and the Norwegian kroner is:

Spot **11.0105 – 11.0110**
3 months **11.0252 – 11.0259**

A UK company is expecting to receive an income of 800,000 kroners in three months time and wishes to hedge the exposure.

Required

Explain how a forward contract would be used to hedge the exposure, and calculate the resulting sterling cash flows for the company.

Soln

The company has an exposure to income in kroners in three months time. It can hedge the exposure by using a forward contract to fix a rate for exchanging the kroners into sterling. The rate available is 11.0259. (At this rate, the bank will have to pay out less in sterling than at the lower rate of 11.0252)

The company therefore fixes sterling income at $\text{£}72,556.44$ ($800,000/11.0259$)

Advantages of forward contracts

Forward contracts are used extensively for hedging currency transaction exposures.

Their advantages include: -

- Flexibility with regard to the amount to be covered
- Relatively straight forward both to comprehend and to organize

Disadvantages include the following

- It is a contractual commitment, which must be completed on the due date. This means that if a payment from the overseas customer is late, the company receiving the payment and wishing to convert it using its forward contract will have a problem. The existing forward contract must be settled, although the bank will arrange a new forward contract for the new date when the currency cash flow is due. To help overcome this problem an 'option date' forward contract can be arranged. This is a forward contract that allows the company to settle a forward contract at an agreed fixed rate of exchange, but at any time between two specified dates. If the currency cash flow occurs between these two dates, the forward contract can be settled at the agreed fixed rate.
- It eliminates the downside risk of an adverse movement in the spot rate, but also prevents any participation in upside potential of any favorable movement in the spot rate. Whatever happens to the actual exchange rate, the forward contract must be honored, even if it would be beneficial to exchanged currencies at the spot rate prevailing at that time.

(V) MONEY MARKET HEDGE (HEDGING IN MONEY MARKETS)

The money markets are markets for wholesale (large-scale) lending and borrowing, or trading in short-term financial instruments. Many companies are able to borrow or deposit funds through their bank in the money markets.

Instead of hedging a currency exposure with a forward contract, a company could use the money markets to lend or borrow, and achieve a similar result.

Since forward exchange rates are derived from spot rates and money market interest rates, the end result from hedging should be roughly the same by either method.

Objective of money market.

Borrow or lend to lock in home currency value of cash flow

Establishing a money market hedge

To work out how to use the money markets to hedge, you need to go back to the basic question of what is the exposure, and what is needed to hedge the exposure.

There are basically two situations to consider:

- A company is expecting to receive income in a foreign currency at a future date, and intends to exchange it into domestic currency
- A company is expecting to make a foreign currency payment at some time in the future, and use domestic currency to buy the foreign currency it needs to make the payment

Exposure: future income foreign currency (hedging receivables)

When the exposure arises from future income receivable in foreign currency, a hedge can be created by fixing the value of that income now in domestic currency. In other words, we need to fix the effective exchange value of the future currency income.

Ways of doing this is as follows:

- Borrow now in the foreign currency. The term of the loan should be from now until the currency income is receivable. Ideally, borrow just enough money so that the loan plus interest repayable when the loan matures equals the future income receivable in the currency. In this way, the currency income will pay off the loan plus interest, so that the currency income and currency payment match each other.
- Exchange the borrowed currency immediately into domestic currency at the spot rate. The domestic currency can either be used immediately, or put on deposit to earn interest. Either way, the value of the future income in domestic currency is fixed.

Illustration

A UK company sells products worth US\$ 1 million to a customer in the USA, with payment to be made in three months. Information is as follows

Current spot rate (£/ US\$) 1.4920 –1.5020

3-month interest rate (p.a)

	Deposit	Borrowing
£	5 3/32 %	5 3/16 %
US\$	4 5/16 %	4 9/16 %

How might the company set up a money market hedge for the transaction exposure?

Soln

Note: The interest rates given are annual rates relevant for three months borrowing or lending situations. This how money market rates are always expressed. So, for instance, if you borrow dollars for three months the interest would be calculated using $4\frac{9}{16}\% \div 4 = 4.140625\%$

Remember that to do the calculations, you need to use $(1 + r)$

Step 1

The company will receive \$ 1 million in three months, so to create a hedge it can borrow US dollars now for three months. The amount borrowed plus interest will be paid at the end of the three months, and the loan plus interest should add up to \$ 1 million, so that the future dollars income will be exactly the amount required to pay off the liability.

If the future currency income is F, the amount borrowed now should be $F / (1+r)$, where r is the amount of the interest rate charged. Here, the company would borrow for three months at an annual rate of $4\frac{9}{16}\%$, but the interest charge for three months, as explained above, is 1.140625%. The value of $(1 + r)$ is therefore 1.01140625.

So: borrow $\frac{\$ 1 \text{ million}}{1.01140625}$ now i.e. \$ 9888,722 at 1.140625%

In three months you will owe \$ 1 million exactly, which will be settled out of the dollar receipts from the customer.

Step 2

Exchange the borrowed US dollars into sterling immediately at the spot rate of 1.5020

The amount of sterling received now will be:

$$\$988,722 / 1.5020 = \text{£}658,270$$

Step 3

The sterling income can be used in the business now. However, for comparative purposes, an examination question might ask you to calculate what the company would earn if it put the sterling receipts on deposit for the three-month period.

The sterling deposit rate for three months is $5 \frac{3}{32} \% \text{ p.a.}$, which is 1.2734375% for the three-month period.

An amount deposited now, P, will increase in value to $P(1 + r)$ at the end of deposit period, where r is the rate of interest earned for the deposit period. Here, although the annual interest rate is $5 \frac{3}{32} \% \text{ p.a.}$, the actual amount earned over the three-month period is 1.2734375 and so $(1 + r) = 1.012734375$.

After three-months, this amount with interest would have increased in value to:

$$\text{£}658,270 \times 1.012734375 = \text{£} 666,653$$

In this example, £666,653 is a certain cash flow in sterling, and the transaction exposure has been hedged. In effect, the hedge has locked in an effective three-month forward exchange rate of \$1.5000 ($\$1,000,000/\text{£}666,653$)

Exposure: future payment in foreign currency (hedging payables)

A similar approach can be taken to create a money market hedge when there is an exposure to a future payment in a foreign currency. In this situation, a hedge can be created by exchanging domestic currency for foreign currency now (spot) and putting the currency on deposit until the future payment has to be made. The amount borrowed plus the interest earned in the deposit period should be exactly enough to make the currency payment when it falls due.

Specifically it involves the following steps: -

- Determine present value of the foreign currency to be paid (using foreign currency interest rate as a discount rate)
- Borrow equivalent amount of home currency(considering spot exchange rate)

- Convert the home currency into PV equivalent of foreign currency(in spot market now) and make a foreign currency deposit
- On payment day, withdraw the foreign currency deposit (which by the time equals the payable amount) and make payment.

The cash flows are fixed because the cost in domestic currency is the cost of buying foreign currency spot to put on deposit

Illustration

A UK company is an importer of products from a supplier in the USA, and is therefore expecting to pay for products worth US\$ 1 million in three months. Information is as follows

Current spot rate (£ / US\$) 1.4920 –1.5020

3-month interest rate (p.a)

	Deposit	Borrowing
£	5 3/32 %	5 3/16 %
US\$	4 5/16 %	4 9/16 %

How can a money market hedge be constructed to hedge the exposure to currency risk?

Solution

The company should buy dollars now and put them on deposit for three months.

The three-month dollar deposit rate is 4 5/16 % per annum, which means that interest earned in a three-month period will be $4 \frac{5}{16}\% \div 4 = 1.078125\%$

$$1.078125\%/100 = 0.01078125$$

Step 1

The amount of dollars to put on deposit for three months, to be worth \$1,000,000 after three months is \$ 989,334 ($1,000,000/1.01078125$). This will be used to make the payment of \$ 1 million at the end of the three-month period

Step 2

In order to deposit \$989,334, the company should buy the dollars spot in exchange for sterling. The spot rate will be 1.4920, and the sterling cost to the company would be £666,092 ($989,334/1.4920$).

Step 3

An examination question is likely to require you to assume that in order to obtain the sterling to buy the dollars spot, the company will need to borrow sterling for the period of the hedge, which in this case is three months.

If the company had to borrow £663,092 for three months, the cost would be as follows.

Borrow £663,092 now at $5 \frac{3}{16}$ % p.a. This is 1.296875% for the three months. At the end of three months, repay $£663,092 \times 1.01296875 = £671,691$.

Again, the money market hedge creates a certain cash flow irrespective of exchange rate or interest rate fluctuations. Once these interest rates have been secured at the start of the period they become fixed. The effective forward exchange rate secured by the hedge is 1.4888 ($1,000,000/671,691$)

Note: Conditions for using money market hedge.

- Firms must have access to money market for different currencies
- The date of expected future cash flows and money market transaction maturity must match

FUTURES MARKET

Futures contract is a type of derivative instrument, or financial contract, in which two parties agree to transact a set of financial instruments or physical commodities for future delivery at a particular price. If you buy a futures contract, you are basically agreeing to buy something that a seller has not yet produced for a set price. But participating in the futures market does not necessarily mean that you will be responsible for receiving or delivering large inventories of physical commodities - remember, buyers and sellers in the futures market primarily enter into futures contracts to hedge risk or speculate rather than to exchange physical goods (which is the primary activity of the cash /spot market. That is why not only producers and consumers but also speculators use futures as financial instruments.

The consensus in the investment world is that the futures market is a major financial hub, providing an outlet for intense competition among buyers and sellers and, more importantly, providing a center to manage price risks. The futures market is extremely liquid, risky and complex by nature, but it can be understood if we break down how it functions.

While futures are not for the risk averse, they are useful for a wide range of people. In this hand out, you'll learn how the futures market works; who uses futures and which strategies will make you a successful trader on the futures market.

A BRIEF HISTORY OF FUTURES

Before the North American futures market originated some 150 years ago, farmers would grow their crops and then bring them to market in the hope of selling their inventory. But without any indication of demand, supply often exceeded what was needed and un-purchased crops were left to rot in the streets! Conversely, when a given commodity - wheat, for instance - was out of season, the goods made from it became very expensive because the crop was no longer available

In the mid-nineteenth century, central grain markets were established and a central marketplace was created for farmers to bring their commodities and sell them either for immediate delivery (spot trading) or for forward delivery. The latter contracts - forward contracts - were the forerunners to today's futures contracts. In fact, this concept saved many, a farmer the loss of crops and profits and helped stabilize supply and prices in the off-season.

Today's futures market is a global marketplace for not only agricultural goods, but also for currencies and financial instruments such as Treasury bonds and securities (securities futures). It's a diverse meeting place of farmers, exporters, importers, manufacturers and speculators. Thanks to modern technology, commodities prices are seen throughout the world, so an American farmer can match a bid from a buyer in Europe.

Currency futures contracts are currently available for the British pound, Canadian dollar, Deutsche mark, Swiss franc, French franc, Japanese yen, Australian dollar and European currency unit.

Contract sizes are standardized according to amount of foreign currency, for example, £ 62,500, C\$ 100,000, SFr 125,000, A\$100,000, DM 125,000, FF 250, 000, ¥ 12,500,000

HOW FUTURES MARKET WORKS

The futures market is a centralized marketplace for buyers and sellers from around the world who meet and enter into futures contracts. Pricing can be based on an open cry system, or bids and offers can be matched electronically. The futures contract will state the price that will be paid and the date of delivery. But don't worry, as we mentioned earlier, almost all futures contracts end without the actual physical delivery of the commodity

TYPES OF FUTURES CONTRACTS

There are mainly two types of futures contracts, namely currency futures and interest rate futures.

What Exactly Is a Futures Contract?

Let's say, for example, that you decide to subscribe to cable TV (e.g. Multi-choice Tanzania). As the buyer, you enter into an agreement with the cable company to receive a specific number of cable channels at a certain price every month for the next year. This contract made with the cable company is similar to a futures contract, in that you have agreed to receive a product at a future date, with the price and terms for delivery already set. You have secured your price for now and the next year - even if the price of cable rises during that time. By entering into this agreement with the cable company, you have reduced your risk of higher prices.

That's how the futures market works. Except instead of a cable TV provider, a producer of wheat may be trying to secure a selling price for next season's crop, while a bread maker may be trying to secure a buying price to determine how much bread can be made and at what profit. So the farmer and the bread maker may enter into a futures contract requiring the delivery of 5,000 sacks of grain to the buyer in June at a price of Tshs 10,000 per sack. By entering into this futures contract, the farmer and the bread maker secure a price that both parties believe will be a fair price in June. It is this contract - and not the grain per se - that can then be bought and sold in the futures market.

So, a futures contract is an agreement between two parties: a short position - the party who agrees to deliver a commodity - and a long position - the party who agrees to receive a commodity. In the above scenario, the farmer would be the holder of the short position (agreeing to sell) while the bread maker would be the holder of the long (agreeing to buy). We will talk

more about the outlooks of the long and short positions in the other section, but for now it's important to know that every contract involves both positions.

In every futures contract, everything is specified: the quantity and quality of the commodity, the specific price per unit, and the date and method of delivery. The “price” of a futures contract is represented by the agreed-upon price of the underlying commodity or financial instrument that will be delivered in the future. For example, in the above scenario, the price of the contract is 5,000 sacks of grain at a price of Tshs 10,000 per sack.

Profit And Loss - Cash Settlement

The profits and losses of a futures contract depend on the daily movements of the market for that contract and are calculated on a daily basis. For example, say the futures contracts for wheat increases to Tshs 15,000 per sack the day after the above farmer and bread maker enter into their futures contract of Tshs 10,000 per sack. The farmer, as the holder of the short position, has lost Tshs 5,000 per sack because the selling price just increased from the future price at which he is obliged to sell his wheat. The bread maker, as the long position, has profited by Tshs 5,000 per sack because the price he is obliged to pay is less than what the rest of the market is obliged to pay in the future for wheat.

On the day the change occurs, the farmer's account is debited Tshs 25,000,000 (Tshs 5,000 per sack X 5,000 sacks) and the bread maker's account is credited by Tshs 25,000,000 (Tshs 5,000 per sack X 5,000 sacks). As the market moves every day, these kinds of adjustments are made accordingly. Unlike the stock market, futures positions are settled on a daily basis, which means that gains and losses from a day's trading are deducted or credited to a person's account each day. In the stock market, the capital gains or losses from movements in price aren't realized until the investor decides to sell the stock or cover his or her short position.

As the accounts of the parties in futures contracts are adjusted every day, most transactions in the futures market are settled in cash, and the actual physical commodity is bought or sold in the cash market. Prices in the cash and futures market tend to move parallel to one another, and when a futures contract expires, the prices merge into one price. So on the date either party decides to close out their futures position, the contract will be settled. If the contract was settled at Tshs 15,000 per sack, the farmer would lose Tshs5,000 on the futures contract and the bread maker would have made Tshs5,000 on the contract.

But after the settlement of the futures contract, the bread maker still needs wheat to make bread, so he will in actuality buy his wheat in the cash market (or from a wheat pool) for Tshs 15,000 per sack (a total of Tshs 75,000,000) because that's the price of wheat in the cash market when he closes out his contract. However, technically, the bread maker's futures profits of Tshs5,000 go towards his purchase, which means he still pays his locked-in price of Tshs 10,000 per sack (Tshs 75,000,000 – Tshs 25,000,000 = Tshs 50,000,000). The farmer, after also closing out the contract, can sell his wheat on the cash market at Tshs 15,000 per sack but because of his losses

from the futures contract with the bread maker, the farmer still actually receives only Tshs 10,000 per sack. In other words, the farmer's loss in the futures contract is offset by the higher selling price in the cash market - this is referred to as hedging.

Now that you see that a futures contract is really more like a financial position, you can also see that the two parties in the wheat futures contract discussed above could be two speculators rather than a farmer and a bread maker. In such a case, the short speculator would simply have lost Tshs 5,000 while the long speculator would have gained that amount. In other words, neither would have to go to the cash market to buy or sell the commodity after the contract expires.

Economic Importance of the Futures Market

Because the futures market is both highly active and central to the global marketplace, it's a good source for vital market information and sentiment indicators.

Price Discovery - Due to its highly competitive nature, the futures market has become an important economic tool to determine prices based on today's and tomorrow's estimated amount of supply and demand. Futures market prices depend on a continuous flow of information from around the world and thus require a high amount of transparency. Factors such as weather, war, debt default, refugee displacement, land reclamation and deforestation can all have a major effect on supply and demand and, as a result, the present and future price of a commodity. This kind of information and the way people absorb it constantly changes the price of a commodity. This process is known as price discovery.

Risk Reduction - Futures markets are also a place for people to reduce risk when making purchases. Risks are reduced because the price is pre-set, therefore letting participants know how much they will need to buy or sell. This helps reduce the ultimate cost to the retail buyer because with less risk there is less of a chance that manufacturers will jack up prices to make up for profit losses in the cash market.

CHARACTERISTICS OF FUTURES

In the futures market, margin has a definition distinct from its definition in the stock market, where margin is the use of borrowed money to purchase securities. In the futures market, margin refers to the initial deposit of "*good faith*" made into an account in order to enter into a futures contract. This margin is referred to as good faith because it is this money that is used to debit any day-to-day losses.

When you open a futures contract, the futures exchange will state a minimum amount of money that you must deposit into your account. This original deposit of money is called the *initial margin*. When your contract is liquidated, you will be refunded the initial margin plus or minus any gains or losses that occur over the span of the futures contract. In other words, the amount in your margin account changes daily as the market fluctuates in relation to your futures contract. The minimum-level margin is determined by the futures exchange and is usually 5% to 10% of

the futures contract. These predetermined initial margin amounts are continuously under review: at times of high market volatility, initial margin requirements can be raised.

The initial margin is the minimum amount required to enter into a new futures contract, but the *maintenance margin* is the lowest amount an account can reach before needing to be replenished. For example, if your margin account drops to a certain level because of a series of daily losses, brokers are required to make a margin call and request that you make an additional deposit into your account to bring the margin back up to the initial amount.

Let's say that you had to deposit an initial margin of \$1,000 on a contract and the maintenance margin level is \$500. A series of losses dropped the value of your account to \$400. This would then prompt the broker to make a margin call to you, requesting a deposit of at least an additional \$600 to bring the account back up to the initial margin level of \$1,000.

Word to the wise: when a margin call is made, the funds usually have to be delivered immediately. If they are not, the brokerage can have the right to liquidate your position completely in order to make up for any losses it may have incurred on your behalf.

Summarized characteristics of futures

- Futures contracts are standardized contracts that trade on organized futures markets
- They are standardized contracts. Each futures contract in particular items has identical specification. For example, every sterling futures contract has exactly the same specification.
- Profits and losses of futures contracts are paid over every day at the end of trading, a practice called marking to market.
- They are exchange-traded. They can only be bought and sold through a futures exchange
- Futures contracts are traded for settlement at predetermined times in the year. These are usually dates in March, June, September and December each year. This means for example, that sterling futures contracts are traded on the CME (Chicago Mercantile Exchange) exchange in Chicago for settlement in these months. This means that you can buy or sell March sterling futures or December sterling future etc.

Most of the futures contracts do not run to their final settlement date. However, those contracts that do run to final settlement are settled in either of two ways, depending on the type of contract. These two methods of settlement are cash settlement or physical delivery. With cash settlement, there is payment in cash from one party to the other. With physical delivery, the seller delivers the underlying item to the buyer. For example, short-term interest rate futures and stock index futures are settled by a cash payment, whereas bond futures are settled by the delivery of a quantity of bonds by the seller to the buyer. Currency futures are cash-settled.

Going Long

When an investor goes long - that is, enters a contract by agreeing to buy and receive delivery of the underlying asset at a set price - it means that he or she is trying to profit from an anticipated future price increase.

For example, let's say that, with an initial margin of \$2,000 in June, **Joe** the speculator buys one September contract of gold at \$350 per ounce, for a total of 1,000 ounces or \$350,000. By buying in June, Joe is going long, with the expectation that the price of gold will rise by the time the contract expires in September.

By August, the price of gold increases by \$2 to \$352 per ounce and Joe decides to sell the contract in order to realize a profit. The 1,000-ounce contract would now be worth \$352,000 and the profit would be \$2,000. Given the very high leverage (remember the initial margin was \$2,000), by going long, Joe made a 100% profit!

Of course, the opposite would be true if the price of gold per ounce had fallen by \$2. The speculator would have realized a 100% loss. It's also important to remember that throughout the time that Joe held the contract; the margin may have dropped below the maintenance margin level. He would, therefore, have had to respond to several margin calls, resulting in an even bigger loss or smaller profit.

Going Short

A speculator who goes short - that is, enters into a futures contract by agreeing to sell and deliver the underlying at a set price - is looking to make a profit from declining price levels. By selling high now, the contract can be repurchased in the future at a lower price, thus generating a profit for the speculator.

Let's say that **Sara** did some research and came to the conclusion that the price of oil was going to decline over the next six months. She could sell a contract today, in November, at the current higher price, and buy it back within the next six months after the price has declined. This strategy is called going short and is used when speculators take advantage of a declining market.

Suppose that, with an initial margin deposit of \$3,000, Sara sold one May crude oil contract (one contract is equivalent to 1,000 barrels) at \$25 per barrel, for a total value of \$25,000.

By March, the price of oil had reached \$20 per barrel and Sara felt it was time to cash in on her profits. As such, she bought back the contract, which was valued at \$20,000. By going short, Sara made a profit of \$5,000! But again, if Sara's research had not been thorough, and she had made a different decision, her strategy could have ended in a big loss.

HOW TO TRADE IN FUTURES MARKET

At the risk of repeating ourselves, it's important to note that a future trading is not for everyone. You can invest in the futures market in a number of different ways, but before taking the plunge, you must be sure of the amount of risk you're willing to take. As a futures trader, you should have a solid understanding of how the market and contracts function. You'll also need to determine how much time, attention, and research you can dedicate to the investment. Talk to your broker and ask questions before opening a futures account

Unlike traditional equity traders, futures traders are advised to only use funds that have been earmarked as pure "risk capital"- the risks really are that high. Once you've made the initial decision to enter the market, the next question should be "How?" Here are three different approaches to consider:

Ticks

A tick is the minimum price movement for a futures contract. For example, the minimum price movement for a CME-traded sterling futures contract is \$0.0001. The minimum price movement for a contract is called a tick. If the price of a sterling futures contract changes from, say \$1.4105 to \$1.4120, the price has risen \$0.00015 or 15 ticks.

The significance of a tick for futures trading is that every one-tick movement in price has the same money value.

Take for example the sterling/US dollar futures contract traded on the Chicago Mercantile exchange. Each contract is for a standard amount of £ 62,500. The contracts are priced at the exchange rate, in US dollar, and the tick size is \$0.0001. This means that every movement in the price of the contract by one tick is worth \$6.25, which is £62,500 at \$0.001 per pound

Ticks are used to calculate the value of a change in price to someone with a long or a short position in futures.

- If some one has a long position, a rise in the price of the futures represents a profit, and a fall in price represents a loss
- If someone has a long position, a rise in the value of the futures represents a loss, and a fall in price represents a profit.

More illustrations on Futures

1. A company buys five September sterling futures on the CME at a price of \$ 1.4235 (this means that a company has purchased futures for $5 \times \text{sterling } 62,500 = \text{pound } 312,500$, and so has a forward contract to buy sterling 312,500 at a rate of \$1.4235)

It subsequently sells five September contracts at a price of \$1.4300 (so it is selling pound 312,500 at \$1.4300)

The futures position is closed at a profit:

Buy at	1.4235
Sell at	<u>1.4300</u>
Gain per contract	<u>0.0075</u>

The total gain is 75 ticks per contract at \$6.25 per tick \times 5 contracts = \$2,343.75

2. On Tuesday morning, an investor takes a long position in a Swiss franc futures contract that matures on Thursday afternoon. The agreed-upon price is \$0.75 for SFr 125,000. At the close of trading on Tuesday the futures price has risen to \$ 0.755.

Required

Record the daily settlement.

Solution

Due to daily settlement, three things occur

- 1) The investor receives her cash profit of \$ 625 (i.e. $125,000 \times 0.005$). Where $0.005 = 0.755 - 0.75$
- 2) The existing futures contract with a price of \$0.75 is cancelled
- 3) The investor receives a new futures contract with the prevailing price of \$0.755

Thus, the value of the futures contract is set to zero at the end of each trading day.

MUHAMMAD MUSTAFA

MBA FROM UOS

At Wednesday close, the price has declined to \$ 0.752. The investor must pay the \$ 375 (125,000 x 0.003) to the other side of the contract and trade in her old contract for new one with a price of \$0.752. At Thursday close, the price drops to \$0.74, and the contract matures.

The investor pays her \$ 1,500 (125,000 x 0.012) loss to the other side and takes delivery of the Swiss francs, paying the prevailing price of \$0.74

Time	Action	Cash flow
Tuesday morning	Investor buys SFs futures contract that matures in two days. Price is \$ 0.75	None
Tuesday close	Futures price rises to \$0.755 Position is marked to market	Investor receives $125,000 \times (0.755 - 0.75) = \625
Wednesday close	Futures price rises to \$0.752 Position is marked to market	Investor pays $125,000 \times (0.755 - 0.752) = \375
Thursday close	Futures price drops to \$0.74 Contract is marked to market Investor takes delivery of Sfr 125,000	Investor pays $125,000 \times (0.752 - 0.74) = \$1,500$ Investor pays $125,000 \times 0.74 = \$92,5000$

3. (**Forward –futures arbitrage**) Suppose that the inter-bank forward bid for June 18 on pounds sterling is \$1.2927 at the same time that the price of IMM (International Monetary Market) sterling futures for delivery on June 18 is \$ 1.2915.

Required

How could the dealer use arbitrage to profit from this situation?

Solution

The dealer would simultaneously buy the June sterling futures contract for \$80,718.75 (62,500 x \$1.2915) and sell an equivalent amount of the forward, worth \$80,793.75 (62,500 x \$ 1.2927),

for June delivery. Upon settlement, the dealer would earn a profit of \$75. Alternatively, if the markets come back together before June 18, the dealer could unwind his position (by simultaneously buying Sterling 62,500 forward and selling a futures contract, both for delivery on June 18) and earn the same \$75 profit.

Although the amount of profit on this transaction is small, it becomes \$7,500 if 100 futures contracts are traded.

- 4) On Monday morning, an investor takes a long position in a pound futures contract that matures on Wednesday afternoon. The agreed-upon price is \$1.78 for sterling 62,500. At the close of trading on Monday, the futures price has risen to \$1.79. At Tuesday close, the price rises further to \$1.80. At Wednesday close, the price falls to \$1.785 and the contract matures. The investor takes delivery of the pounds at the prevailing price of \$1.796.

Required

Detail the daily settlement process. What will be the investor's profit/loss?

Solution

Time	Action	Cash flow
Monday morning	Investor buys pound futures contract that matures in two days. Price is \$ 1.78	None
Monday close	Futures price rises to \$1.79 Position is marked to market	Investor receives $62,500 \times (1.79 - 1.78) = \625
Tuesday close	Futures price rises to \$1.80 Position is marked to market	Investor receives $62,500 \times (1.80 - 1.79) = \625
Wednesday close	Futures price falls to \$1.785 Contract is marked to market Investor takes delivery of Sterling 62,500	Investor pays $62,500 \times (1.80 - 1.785) = \937.50 Investor pays $62,500 \times 1.785 = \$111,562.50$

- 5) On Monday morning, an investor takes a short position in a DM futures contract that matures on Wednesday afternoon. The agreed-upon price is \$0.6370 for DM125, 000. At the close of trading on Monday, the futures price has fallen to \$0.6315. At Tuesday close, the

price falls further to \$0.6291. At Wednesday close, the price rises to \$0.6420, and the contract matures. The investor delivers the DM at the prevailing price of \$0.63.

Required

Detail the daily settlement process. What will be the investor's profit/loss?

Hedging exchange rate risk with currency futures contracts

Currency risk can be hedged by buying or selling futures contracts

(a) Hedging a future receipt of foreign currency (hedging foreign receivable in futures market)

When a company is expecting to receive foreign currency at a future date, the exposure is to the risk that the currency will fall in value spot between now and the date the currency is received. A hedge is therefore created by selling the currency forward, just as for hedging with forward exchange contracts.

A difference between hedging with forward contracts is that a forward contract is a transaction for the exchange of one currency for another, and the contract is settled by a physical exchange of currency. With currency futures

- When the foreign currency is eventually received, it will be sold spot, at whatever the spot rate happens to be
- When the currency is received, the futures position will be closed, and there will be a profit or loss on the position

If futures hedge has been properly constructed, if the spot rate moves adversely up to the time the currency is received, the loss from the adverse movement in the spot price will be offset by as profit on the futures trading.

On the other hand, if the spot rate moves favorably up to the time the currency is received, the profit from the favorable movement in the spot price will be offset by a loss on the future trading.

Futures contracts rarely give a perfect hedge, because the amount of foreign currency involved is rarely the equivalent of an exact number of futures contracts

(b) Hedging for a future payment in foreign currency

A company might have an exposure to a future payment in a foreign currency. It can hedge the exposure by arranging to buy the currency forward using futures.

When the payment is actually made, the currency to make the payment should be purchased spot. The futures position should be closed. If there is a gain on the futures position, this might be used to make some of the payment (if it is in same currency as the payment)

Note:

Profit = number of contracts x number of ticks by which the price has changed x tick value

Tick value = contract size x tick size

Number of ticks = change in futures price/ tick size

Example:

A UK company purchased goods for euro 870,000 in December, which it must pay for in May. It wishes to hedge its exposure with currency futures. The spot rate when the goods were purchased is euro 1 = pound 0.7161. The price of sterling/euro June futures at the same time is euro 1 = pound 0.7180.

Sterling/euro futures are for euro 100,000, they are priced in pound per euro 1, the tick size is pound 0.0001 and the value of a tick is pound 10.

Required

- (a) How might the company use currency futures to establish a hedge for the currency exposure?
- (b) Having established the hedge, suppose the spot rate when the goods are paid for is pound 0.7215- 0.7220, and the price of the June futures is pound 0.7213. How would the position be unwound and what would be the effective exchange rate for the payment in euros?

Solution

The company has an exposure to a payment in euros in May. It will buy euros in May to make this payment, and the purpose of currency futures should therefore be to buy euros forward to try to fix an exchange rate. To get a perfect hedge, the company should therefore buy $870,000/100,000 = 8.7$ euros contracts.

Since we cannot buy a fraction of futures, the choice is between buying 8 or buying 9 June futures at pound 0.7180. Either hedge would be imperfect.

MUHAMMAD MUSTAFA

MBA FROM UOS

In May when the payment of €870,000 is made, the futures position should be closed by selling 8 or 9 futures at euro 0.7213.

Selling price per contract 0.7213

Buying price per contract 0.7180

Profit per contract **0.0033**

If 8 contracts are used in the hedge, the total profit from closing the position would be $8 \times 33 \times 10 = \text{£}2,640$

If 9 contracts are used in the hedge, the total profit from closing the position would be $9 \times 33 \times 10 = \text{£}2,970$

The euros for making the payment should be purchased at the spot rate of £ 0.7220, at a cost of £628,140

	Hedge with 8 futures	Hedge with 9 futures
Cost of buying euros spot	628,140	628,140
Gain on futures position	2,640	2,970
Net cost	625,500	625,170
Effective exchange rate(625000/€870,000)	0.7190	0.7186.

OPTIONS MARKETS

Whatever advantages the forward or futures contract might hold for their purchaser, they have a common disadvantage. While they protect the holder against the risk of adverse movements in exchange rates, they eliminate the possibility of gaining a windfall profit from favorable movements. This was apparently one of the considerations that led some commercial banks to offer currency options to their customers. Exchange-traded currency options were first offered in 1983 by the Philadelphia Stock Exchange (PHLX).

In principal, 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. The seller of the put option or call option must fulfill the contract if the buyer so desires it. Because the option not to buy or sell has value, the buyer must pay the seller of the option some premium for this privilege. As applied to foreign currencies, call options give the customer the right to purchase, and put options give the right to sell, the contracted currencies at the expiration date. An American option can be exercised at any time up to the expiration date; a European option can only be exercised at maturity.

An option that would be profitable to exercise at the current exchange rate is said to be **in-the-money**. Conversely, an **out-of-the money option** is one that would not be profitable to exercise at the current exchange rate. The price at which the option is exercised is called **exercise price** or strike price. An option whose exercise price is the same as the spot exchange rate is termed as **at-the-money**.

- If the exercise price for an option is more favorable for the option holder than the current market price of the underlying item, the option is said to be **in-the-money**
- If the exercise price for option is less favorable for the option holder than the current market price of the underlying item, the option is said to be **out-of-the-money**
- If the exercise price for an option is exactly the same as the current market price of the underlying item, the option is said to be **at-the-money**

The option holder is not obliged to exercise the option, and will never do so if the option is out-of-the-money.

To see how currency options might be used, consider a U.S importer that has a DM62, 500 payments to make a German exporter in 60 days. The importer could purchase a European call option to have the DM delivered to it at a specified exchange rate (the strike price) on the due date. Suppose the option premium is \$0.02 per DM, and the exercise price is \$0.64. The importer has paid \$1,250 for the right to buy DM62, 500 at a price of \$0.64 per DM at the end of 60 days. If at the time importer's payment fall due, the value of the DM has risen to say, \$0.70, the option would be in-the-money. In this case, the importer exercises its call option, and purchases DM for \$0.64.

The importer would earn profit of \$3,750 ($62,500 \times 0.06$), which would more than cover the \$1,250 cost of the option. If the rate has declined below the contracted rate, say, \$0.60, the option would be out-of-the-money. Consequently, the importer would let the option expire and purchase the DM in the spot market. Despite losing the \$1,250 option premium, the importer would still be \$1,250 better off than if it had locked in a rate of \$0.64 with a forward or futures contract.

In contrast, a put option at the same terms (exercise of \$0.64 and put premium of \$0.02 per DM) would be in-the-money at a spot price of \$0.60 and out-of-the-money at \$0.70. If the spot price falls to, say, \$0.58, the holder of put option will deliver DM62,500 worth \$36,250 ($0.58 \times 62,500$) and receive \$40,000 ($0.64 \times 62,500$). The option holder's profit, net of the \$1,250 option premium, is \$2,500. As the spot price falls further, the value of the put option rises. At the extreme, if the spot rate falls to 0, the buyer's profit on the contract will reach \$38,750 ($0.64 \times 62,500 - 1,250$). Below a spot rate of \$0.62, the gain on the put option will more than cover the \$1,250 option premium. Between \$0.62-the break-even price for the put option-and \$0.64, the holder would exercise the option, but the gain will be less than the option premium. At spot prices above \$0.64, the holder would not exercise the option and so would lose the \$1,250 premium. Both the put and the call options will be at at-the-money if the spot rate in 60 days is \$0.64, and the call or put option buyer will lose the \$1,250 option premium.

Typical users of currency options might be financial firms holding large investments overseas where sizable unrealized gains had occurred because of exchange rate changes and where these gains were thought likely to be partially or fully reversed.

OPTION PRICING AND VALUATION

From a theoretical standpoint, the value of an option is comprised of two components; intrinsic value and time value. The intrinsic value of the option is the amount by which the option is in-the-money, or $S - E$, where S is the current spot price and E the exercise price.

In other words, the intrinsic value equals the immediate exercise value of the option. Thus, the further in-the-money an option is, the more valuable it is. An out-of-the-money option has no intrinsic value. For example, the intrinsic value of a call option on the Swiss francs with an exercise price of \$0.74 and spot rate of \$0.77 would be \$0.03 per franc. The intrinsic value of the option for spot rates less than the exercise price is zero. Any excess of the option value over its intrinsic value is called the time value of the contract. An option will generally sell for at least its intrinsic value. The more out-of-the-money an option is, the lower the option price.

Intrinsic value is the difference between the strike price for the option and the current market price of the underlying item. Only an in-the-money option has intrinsic value, however. Intrinsic value cannot be negative, so an out-of-the-money option has intrinsic value of 0

Time value is the value placed on the option. This reflects the likelihood that the market price of the underlying item will move so that the option will become in-the-money or even further in-the-money (deep-in-the money)

Time value depends on the following factors: -

- The period of time remaining to the option's expiry date. The longer the time to expiry, the greater the possibility of the market price changing, and so the greater the time value of the option
- The volatility of the market price of the underlying item. When the market price is more volatile, there is a greater possibility that the price will move sharply in the remaining time to expiry
- For an out-of-the-money option, the extent to which the underlying market price must move before the option becomes in-the-money.

The main features of options

An option gives its holder the right (but not the obligation) to buy or sell a specific quantity of a specific asset at a fixed price on or before a specific future date. An option is purchased by the option holder and is sold by the option 'writer'

Option can be bought and sold over a wide variety of assets from coffee beans to pork bellies, but for the purpose of this syllabus we shall concentrate on financial options.

These are options on an underlying financial asset such as an amount of currency, an interest bearing security or bank deposit, a company's shares or a stock market index.

Options market structure

Exchange –traded and OTC options

Options might be bought and sold on an options exchange. Exchange –traded options include options on equity shares and options on futures contracts. Some currency options are also exchange traded, for example on the Philadelphia Stock exchange. Interest rate options and most currency options are over-the-counter (OTC) options.

A feature of exchange –traded options is that, like future contracts, they are standardized instruments. Each option of a given type is for a standard quantity of the underlying item. Because they are standardized, they are easy to buy and sell.

OTC options, in contrast, are tailored to the specific requirements of the option buyer. The drawback to a tailor –made OTC option is that it cannot easily be re-sold by the option holder. If the option is no longer required, the option holder might have to negotiate with the option writer about terms for an early cancellation of their agreement.

All options have similar features that need to be understood. We look first at equity options to introduce some of the terminology. **Equity** options are chosen because they are usually easier to understand than **currency options** or **interest rate options**

Calls and Puts

Options are either call options or put options (or combination of call and a put)

- A call option gives its holder the right, but not the obligation, to buy the underlying item at the specified price. For example, a call option on shares in NMB plc might give its holder the right to buy 2,000 shares in NMB plc, at a fixed price on or before a specified expiry date for the option
- A put option gives its holder the right, but not obligation, to sell the underlying item at the specified price. For example, a put on shares in ABC plc that gives its holder the right to sell 1,000 shares in ABC plc, fixed price on or before a specified expiry date for the option.

An option is a contractual agreement. When the holder of an option exercise the option, the seller or writer of the option must fulfill his/her side of the contract, and sell (call option) or buy (put option) the underlying item at the agreed price.

Expiry date of options: European –style and American-style options

Every option has an expiry date. Unless it is exercised by its expiry date, the option lapses. Exchange-traded options, like financial futures, have standard expiry dates. For OTC options, the expiry date is negotiable.

Some options can be exercised on their expiry date only, and not before. This type of option is called a European-style option

Some options can be exercised at any time up to and including their expiry date. This type of option is called an American-style option.

The terms “European” and “American” have nothing to do with where the different types of option are available. Both European and American option can be obtained anywhere in the world.

Illustrations

Are the following options in-the-money or out-of-the-money?

1. A call option on 1,000 shares in NMB plc at a strike price of Tshs 600 when the current share price is Tshs 550 (answer –out of the money)
2. A put option on 2,000 shares in DAHACO at strike price of Tshs 630 when the current share price is Tshs 680 (Answer- out of the money)

3. A call option giving its holder the right to borrow Tshs 500,000 for three months at a interest rate of 21% when the current rate is 22.5% (Answer- in – the- money)
4. A put option giving its holder the right to sell US\$ 100,000 at Tsh1185/US\$ when the spot exchange rate is Tshs 1170/US\$ (Answer- in – the- money)

Options premium

An option is purchased by the buyer from the option seller or writer. The purchase price is called the option premium.

With an OTC option, the option premium is the price paid to the option writer, and is negotiated between the buyer and the writer.

With an exchange-traded option, the premium is the market price of the option at the time it is purchased. The premium that an option holder has paid can be compared continually with current market price for the option. Exchange-traded options are therefore similar to future.

Examples.

1. An investor buys ten call options on shares in ABC plc at a strike price of 450. Each option contract is for 1,000 shares and the premium paid was 37 pence. What would happen if, at expiry the share price is: - (a) 520 (b) 430?

Solution

- (a) If the share price is 520, the options are in- the-money and will be exercised. The investor can buy the shares at 450 and sell them immediately at 520 for a gain of 70 per share. The option seller has to supply shares worth 520 at a price of just 450

For the option buyer	Sterling
Gain on option trading	
10 options x 1,000 shares x 70 pence	7,000
Cost of the option	
10 options x 1,000 shares x 37 pence	(3,700)
Net gain	3,300

For the option seller

Loss on option trading

10 options x 1,000 shares x 70 pence	(7,000)
Option premium received	3,700
Net loss	(3,300)

The option holder's gain equals the option writer's loss

Put- Call parity

The Black-scholes model is used to price call options. The price of a put option can be derived from the price of a call using the put-call parity formula:

$$\text{Value of a put} + \text{Current value of Underlying security} = \text{Value of call} + \text{Present value of exercise price}$$

This relationship expresses what is known as put-call parity. i.e. that put and call options must have the same time value when they are identical with respect to exercise price, expiry date and underlying security, otherwise arbitrage profits can be made.

Example

The price of a six-month European call option on shares in Moss plc is 53 pence. The strike price for the options is 260 pence and the current market price of the shares is 290.

What should be the price of a six-month European put option for the same expiry date and the same strike price, if you are given that the present value of the exercise price is 252 pence?

Soln

$$\text{Put value} + 290 = 53 + 252$$

$$\text{Value of Put} = 15$$

The value of the put is lower than the value of the call in this example because the call is in-the-money whereas the put is out-of-the-money.

The delta value

For your examination, you might be required to undertake a basic delta hedge. To construct a delta hedge we need to calculate the value of delta.

For every option held, we can define the delta, which represent the change of the price of the option relative to the change in the price of the underlying security.

$$\text{Delta} = \frac{\text{Change in the price of the option}}{\text{Change in the price of the underlying security.}}$$

Delta is the measure of how much an option price changes given a unit change in the security price. Taking share price as an example, if a change in the share price of 4p results in a change in the option price of 1p then the delta has a value of 0.25 (1p/4p)

Delta is a number that ranges between 0 and 1 for call options and between -1 and 0 for put options. The actual delta value depends on how far it is in-the-money or out-of-the-money

The absolute value of the delta increases towards 1 or -1 as the options goes further in-the-money and decreases towards 0 as the option goes more out-of-the-money.

At-the-money calls options have a delta of 0.50 and put options have a delta of -0.50

HEDGING WITH CURRENCY OPTIONS

Foreign Currency Options offer a wide range of methods for limiting the risks associated with foreign exchange exposure. Option holders can obtain 'Insurance' against adverse movements in exchange rates while maintaining the ability to profit should the exchange rate move favorably.

To construct a hedge against currency risk with currency options, you need to:-

- Establish what the exposure is, and identify the future currency receipt or payment
- Work out whether a call or a put option is required to give the right to buy or sell the currency
- Decide on a strike price. Several strike prices might be available, each with a different premium. There is no 'right' or 'wrong' strike price

Having constructed the hedge by buying options, you will now:

- Exercise the option if it is in-the-money at expiry, and buy or sell the currency at the strike price
- Let the option lapse if it is out-of-the-money and buy or sell the currency at the current spot rate.

Example

1. It is late September and the spot sterling/US dollar \$1.6000

A UK company will be required to pay \$1.2 million to a US supplier in December and has decided to hedge the exposure with currency options. To do this, the company will either buy call options on dollars or sell put option on sterling.

A bank is willing to sell put options on sterling at a strike price of \$1.6000 for a premium of 1.5 cents per sterling

The company will want to buy \$1.2 million in December and it can obtain an option to do this by buying a put option on sterling at a strike price of \$1.60. it will need to have a put option of sterling 750,000 ($\$1.2 \text{ million} / 1.60$)

The cost of this option will be \$11,250 ($0.015 \times \text{sterling } 750,000$).

The company will have to buy dollars spot to pay this premium, and at a spot price of \$1.60, this will cost sterling 7,031.25

The hedge has been constructed. The eventual outcome will depend on what the spot exchange rate is in December when the option expires.

(a) Suppose the spot exchange rate in December is \$1.8000

If the spot rate is \$1.800, the dollar has weakened in value since September, and it will be cheaper to buy dollars (sell sterling) in the spot market at this rate, and let option lapse.

The company's net cost from hedging is therefore:	£
Cost of buying \$ 1.2 million spot at \$1.8000	666,667
Cost of the option	<u>7,031</u>
Total cost	<u>673,698</u>
Effective exchange rate ($\$1.2\text{m}/673,698$)	\$1.7812

(b) Suppose the spot exchange rate in December is \$1.5000

If the spot rate is \$1.5000, the dollar has strengthened in value since September. The option is in the money and should be exercised. The company will receive \$1.2million by selling sterling 750,000 at \$1.6000

The company's net cost from hedging is therefore

	£
Cost of US dollars at \$ 1.6000 (option exercised)	750,000
Cost of the option	<u>7,031</u>
Total cost	<u>757,031</u>
Effective exchange rate (\$1.2m/757,031)	\$1.5851

Gains or losses on hedging with options

It is possible to calculate the 'gain' or 'loss' from using options. This calculation is useful for a company or investor that speculates with options, but is of little relevance to companies that use options for hedging.

The 'gains' 'loss' from trading in options is the combined value:

- The 'gain' when an option is exercised, measured as the value of the difference between the option strike price and the current market price of the underlying item when the option is exercised
- The cost of the option premium. This is always a cost to an option buyer.

In the example above, the gain or loss from buying the put option would be as follows

Put options on sterling at strike price of \$ 1.600

MUHAMMAD MUSTAFA

MBA FROM UOS

Spot rate at expiry \$1.8000

Spot rate at expiry \$1.5000

Cost of dollars at option		750,000
Strike price		
Cost of buying dollars spot	(1.2 million/1.5)	800,000
Gain on options	0	50,000
Cost of premium	(7,031)	<u>(7,031)</u>
Net gain/loss	(7,031)	<u>42,969</u>

The 'break even point' on speculating would occur if the option is in-the-money at expiry, and the gain on exercising the option is exactly the cost of the option, sterling 7,031.

This would occur if the cost of buying the dollars at the spot rate is sterling 757,031. The spot rate would have to be 1.5851 (1.2million/757,031)

1. It is early May and the sterling/US dollar spot rate is \$1,600

A UK company expects to receive \$800,000 from a customer in July and is thinking of hedging the currency exposure with an OTC currency option. It is worried that the dollar will fall in value over the next few months

The following option prices are available for the July expiry date, for calls and puts on sterling in exchange for dollars. Prices are quoted in cents per pound 1.

Strike price	Calls	Puts
1.6000	3.53	0.99
1.6500	1.46	1.85

Required

- (a) How would a hedge be constructed, and what would be the cost at each of the two strike prices?

MUHAMMAD MUSTAFA

MBA FROM UOS

- (b) Suppose that the spot exchange rate in July when the option expires is \$1.700. what action should the company take and what will be the effective exchange rate if its option is at a strike price of (i) 1.6000 (ii) \$1.65000

soln

- (a) The company will want to sell US dollars in exchange for sterling, so it will want to buy sterling. It should therefore buy call options on sterling
- (i) At a strike price of \$1.6, the option should be for sterling 500,000 (800,000/1.6). The cost of the premium will be sterling 17,650 (500,000 x 0.0353)
- (ii) At a strike price of \$1.6500, the option should be for sterling 484,850 (800,000/1.6500). the cost of the premium will be sterling 7,079 (484,850 x \$ 0.0146)
- (b) If the spot rate in July is \$1.7000, the option will be exercised
- (i) If the strike price of the option is \$ 1.6000, the company will receive £500,000 in exchange for \$800,000

	£
Value of US \$ at \$ 1.6000 (option exercised)	500,000
Cost of the option	(17,650)
Net income	482,350
Effective exchange rate (800,000/482,350)	\$1.6585

- (ii) If the strike price of the option is \$1.6500, the company will receive Pound 484,850 in exchange for \$800,000

	£
Value of US dollar at \$1.6000 (option exercised)	484,850
Cost of the option	<u>(7,079)</u>
Net income	<u>477,771</u>
Effective exchange rate (\$800,000/477,771)	\$1.67444

INTEREST RATE AND CURRENCY SWAPS

In this section, we cover alternative strategies for hedging currency or interest rate risk, in addition to forward contracts, futures, and options (short-term), especially strategies for long-term risk.

INTEREST RATE SWAPS

Somewhat complex, innovative financing arrangement for corporations that can reduce borrowing costs and increase control over interest rate risk and foreign exchange exposure. Relatively new market, due to financial deregulation, integration of world financial markets, and currency and interest rate volatility. Market has grown significantly. Total amount of outstanding interest rate swaps in 2004 was \$128T, and \$7T in currency swaps, fastest growth was for Interest Rate Swaps. 5 main currencies: \$, €, ¥, BP and SF.

Interest rate swap involves the exchange of interest payment. It usually occurs when a person or a firm needs fixed-rate funds but is able to get floating-rate funds. It finds another party who needs floating-rate loan but is able to get fixed-rate funds. The two, known as the counter-party, exchange the interest payments and feel as if they are using the loans according to their own choice.

Interest Rate Swap financing involves two parties (MNCs) who agree to exchange CFs, results in benefits for both parties. A single-currency interest rate swap is called an **Interest Rate Swap**, and a cross-currency interest rate swap is called a **Currency Swap**.

The essential condition for the interest-rate swap is that the amount of loan is identical in the two cases and periodic payment of interest takes place in the same currency. At the same time, there must be synchronization of interest between the two parties, one getting cheaper fixed-rate funds and the other getting cheaper floating-rate funds.

Basic (plain vanilla) Interest Rate Swap involves exchanging (swapping) interest payments on Floating-rate debt for interest payments on Fixed-rate debt, with both payments in the same currency. *Reason:* One party actually wants fixed rate debt, but can get a better deal on floating rate; the other party wants floating rate debt, but can get a better deal on fixed rate. Both parties can gain by swapping loan payments (CFs), usually through a bank as a financial intermediary (FI), which charges a fee to broker the transaction.

Currency Swap - One party swaps the interest payments of debt (bonds) denominated in one currency (USD) for the interest payment of debt (bonds) denominated in another currency (SF or BP), usually on a "**fixed-for-fixed rate**" basis. Currency swap is used for cost savings on debt, or for hedging long term currency risk.

SWAP BANK - Financial Institution (FI) in the swap business, either as dealer or broker, usually large commercial and investment banks. **Broker bank:** Arranges and brokers the deal, but does not assume any of the risk, just charges a commission/fee for structuring and servicing the swap. **Dealer bank:** Bank that is willing to take a position on one side of the swap or the other, and therefore assume some risk (interest rate or currency). Dealer would not only receive a commission for arranging and servicing the swap, but would take a position in the swap, at least until it sold its position later.

Example: Banks trading currency forward contracts. If they always match shorts and longs, there is no risk, acting as brokers. For every party who want to buy BP forward from the bank, there is a party selling BP forward to the bank. If the bank has a client who wants to sell £10m forward (short position) in 6 months, and accepts the contract without a forward BP buyer (long), it is exposed to currency risk by taking the long position itself. As a trader-broker, the bank can do more business than just a broker, but involves assuming risk exposure.

FIXED-FOR-FLOATING INTEREST RATE SWAP

Example 1: Bank A is AAA-rated bank in U.K., and needs a \$10m cash inflow to finance 5-year, floating-rate (based on LIBOR), Eurodollar term loans to its commercial clients. To minimize (eliminate) interest rate risk, bank would prefer to match floating-rate debt (CDs or notes) with its expected floating-rate assets (Eurodollar loans). Bank has two sources of debt/deposits available:

- a) 5-Year FIXED-RATE BONDS @ 10% or
- b) 5-Year FLOATING-RATE NOTES (FRNs) @ LIBOR

With floating rate loans and fixed rate debt, there is interest rate risk. Therefore, bank prefers floating-rate debt, to match the floating rate loan (asset). For example, if the bank pays LIBOR for its deposits and charges LIBOR + 2% on its loans, it will always have a 2% spread (profit margin), whether LIBOR increases or decreases.

Company B is a BBB rated MNC in U.S., and needs \$10m debt for 5 years to finance a capital expenditure (new project, investment in property/plant, replace worn out equipment, etc.). MNC has two sources of debt available:

- a) 5-Year FIXED-RATE BONDS @ 11.25% (higher risk than AAA bank)
- b) 5-Year FLOATING-RATE NOTES (FRNs) @ LIBOR + .50%

With FRNs there is interest rate risk for the MNC if interest rates changes. Therefore, MNC prefers fixed-rate debt to guarantee a fixed, stable interest expense.

Swap Bank can broker an interest rate swap deal (for a fee) with Bank A and Company B that will benefit both counterparties. When structured properly, all three parties will benefit (Bank A, Company B, and the swap bank). Here is how:-

	"Risky" BBB Company B	"Safe" AAA Bank A	Difference	Risk Premium for Co. B
Fixed-Rate	11.25%	10%	(11.25 - 10%)	+1.25% Fixed-rate
Floating-Rate	LIBOR +0.5%	LIBOR	<u>(LIBOR + .5%) - LIBOR</u>	<u>(.50% Variable-rate)</u> QSD 0.75%

The key to an interest-rate swap is the **QSD (Quality Spread Differential)**, the difference or spread between fixed interest rates (Risky - Safe), and variable interest rates (Risky - Safe). Co. B would have to pay 1.25% more than Bank A for fixed rate debt, but only .50% more for variable rate. The QSD is 0.75%, reflecting the difference or additional default risk premium on fixed rate debt for MNC. The yield curve for fixed-rate risky debt is much steeper than for safe debt, since with fixed-rate debt lenders will: 1) Not have opportunities to adjust (raise) the rate once fixed, and 2) Not have the opportunity to cancel the debt if the company gets in trouble, and 3) Not be able to change the terms of the loan. All of these would be possible under floating-rate agreements, and lenders therefore have to "lock-in" a high default risk premium for fixed-rate debt at the beginning of the loan.

When a QSD exists, it represents the potential gains from trade if both parties get together, through the swap bank. Here is one example of how the 0.75% QSD can be split up: Bank A will save .375% per year in interest savings (or \$37,500 per year for 5 years for \$10m) and the MNC will save .25% in the form of interest rate savings (or \$25,000 per year for 5 years), and the swap bank earns .125% per year profit on \$10m to arrange the deal (or \$12,500 per year for 5 years).

Or there is \$75,000 in annual savings (\$10m x 0.75%) to split 3 ways: \$37,500, \$25,000 and \$12,500 every year, or \$375,000 in total savings over 5 years (\$187,500, \$125,000 and \$62,500).

Without the swap, Bank A will pay variable-rate @ LIBOR, and Co. B will pay fixed-rate @ 11.25%. With the swap, Bank A will pay **all-in-cost** (interest expense, transactions cost, service charges) interest expense of LIBOR - .375% (saving .375%) and Co. B will pay **all-in-cost** interest expense of 11% (saving .25%). Here is how:

Instead of actually issuing the type of debt they really want, each party issues the opposite of what they want, and then they swap CFs. Instead of variable debt at LIBOR, Bank A issues fixed-rate Eurodollar bonds at 10%. Instead of issuing fixed rate at 11.25%, Co. B issues variable-rate debt at LIBOR + .50%. The parties issue the debt that they don't want, and make interest payments directly to the bondholders for 5 years. The swap bank then arranges the following CF payments:

MUHAMMAD MUSTAFA

MBA FROM UOS

1. Co. B pays 10.50% fixed-rate interest (on \$10m) to the Swap Bank, and the bank passes on 10.375% interest payment to Bank A in U.K. (Swap bank makes the difference = $10.50\% - 10.375\% = .125\%$).
2. Bank A pays LIBOR on \$10m to the Swap Bank and they pass on LIBOR to Company B.

As a result, here is the net position of each party:

Bank A

Pays -10% fixed-rate interest to bondholders

Pays variable-rate -LIBOR interest to Swap Bank

Receives +10.375% fixed interest rate from Swap Bank

NET INTEREST = PAY LIBOR - .375% variable rate (w/swap), vs. LIBOR (w/o swap)

Company B

Pays variable-rate $-(\text{LIBOR} + .5\%)$ to bondholders

Pays -10.50% fixed-rate to Swap Bank

Receives +(\text{LIBOR}) from Swap Bank

NET INTEREST = PAY 11.00% Fixed Rate (w/swap), vs. 11.25% (w/o swap)

Swap Bank

Receives 10.50% fixed-rate from Co. B

Pays 10.375% to Bank A (Net of +.125% on fixed-rate debt)

Receives LIBOR from Bank A

Pays LIBOR to Co. B

NET INCOME = .125%

Net result: Bank A borrows \$10m at LIBOR - .375% instead of LIBOR, gets a variable-rate, and saves 0.375% per year interest rate, or \$37,500 per year in interest expense (\$187,500 over 5 years).

Co. B borrows \$10m at 11% instead of 11.25%, gets a fixed rate, and saves .25% per year in interest rate, or \$25,000 per year in interest expense (\$125,000 over 5 years).

Swap Bank makes .125% per year on \$10m to arrange the deal, or \$12,500 per year (\$62,500) total.

Example 2: Suppose Firm A needs fixed-rate funds which are available to it at the rate of 10.50% to be computed half yearly, but it has access to cheaper floating-rate funds available to it at LIBOR + 0.3%. Firm B needs floating-rate funds available

Outcome: Gains from trade (swap): WIN-WIN-WIN for all three parties.

Note: All interest payments/CFs are in USD. Actually, only the net difference in dollar CFs actually needs to be exchanged, NOT the gross amount. *Example:* Suppose that when the first payment is due LIBOR = 8%.

CFs for Bank A:

Receive \$1.0375m from Swap Bank (10.375% of \$10m)

Pay \$800,000 to Swap Bank (LIBOR = 8% x \$10m) **Net**

RECEIPT from SWAP BANK = +\$237,500

Pay (\$1m) to bondholders (\$10m x 10%)

Total Interest Expense = \$1m - \$237,500 = \$762,500 (7.625% of \$10m, @LIBOR -.375%), vs. \$800,000 @ LIBOR without Swap, or a savings of \$37,500.

CFs for Co. B:

Pay \$1.050m to Swap Bank (10.50% x \$10m)

Receive \$800,000 from Swap Bank (LIBOR = 8% x \$10m)

Net PMT to SWAP BANK = (\$250,000)

Pay (\$850,000) to bondholders (LIBOR + .5% = 8.5%) x \$10m.

Total interest expense = \$250k to swap bank + \$850k to bondholders = \$1.10m (or 11% of \$10m), vs. \$1.125m @ 11.25% without swap, or a savings of \$25,000 per year for MNC.

Swap Bank Receives \$250,000 from Co. B, and pays \$237,500 to Bank A, profit of \$12,500/year.

Regardless of what happens to LIBOR, the Swap Bank will always receive \$12,500 profit/year.

Problem Set question: Show the CFs above when LIBOR = 6% and verify that the bank will make \$12,500. Repeat for LIBOR = 10%.

Note: the swap arrangement above is not unique, and is just one of many possible outcomes. The QSD of .75% tells us only that there is \$75,000 per year and \$375,000 over five years in gains from trade using an interest rate swap. Negotiations among the three parties will determine the exact outcome. In this case, Bank A got the greatest share of gains, and the swap bank got the least – this is just one outcome, many others are possible. Also, this interest rate swap was used for *long-term* (5-year) interest rate risk.

BASIC CURRENCY SWAP

Currency Swap Example: U.S. MNC like GM has a subsidiary in Germany, and there is an investment opportunity for expansion in Germany that will require €40m and will have an economic life of 5 years. Current spot rate is \$1.30/€, so the firm could consider raising \$52m in U.S. by issuing bonds at 8% (payable in dollars), and converting \$52m to €40m to finance the expenditure. Hopefully CFs (in Euros) would be generated from the project to make the interest payments in \$. **Problem: "Transaction Exposure"** (potential change in the financial position of the project due to currency changes over 5 years), because German earnings are in Euros, interest payments due in U.S. are in USD. What is the MNC worried about???

Alternative Loan: Raise €40m in the Eurobond market by issuing 5-year Eurobonds, payable in Euros. Eurobond rate is 6% for a well-known German or European firm, but the U.S. subsidiary in Germany must pay 7% because it might be relatively unknown or new, so there is a +1% risk premium.

Assume there is a German MNC with a mirror-image financing need. It has a U.S. subsidiary needing \$52m for an expansion project in U.S. with a 5-year life. German MNC could borrow €40m in Germany at 6%, and convert to dollars, but there is also **transaction exposure** since dollar CFs would be generated in U.S. to make Euro interest payments in Germany. Worried about what over 5 years??? Company could issue Eurodollar bonds in U.S., but would face a 9% (normal rate is 8%) interest rate because the German subsidiary is not well-known in U.S., and would pay a +1% risk premium.

Swap Bank could arrange a **Currency Swap** to: 1) Eliminate the long-term currency risk for both MNCs (transaction exposure), and 2) Reduce interest expense for both companies. Each company has a "**comparative advantage**" at raising money in its home country, so each MNC would issue debt domestically at a savings of 1% compared to the foreign MNC raising funds (U.S. company raises \$52m in U.S. at 8%, vs. 9% for the German MNC; German company raises €40m in Germany at 6%, vs. 7% for the U.S. MNC).

IRP review question: Based on the difference in interest rates (8% in the U.S. and 6% in Germany), what is expected to happen to the Euro over the next 5 years? How much?

The principal sums would be exchanged through a Swap Bank - U.S. company issues \$52m debt in U.S. @8% and transfers \$52m to the German subsidiary in U.S. and the German company issues €40m of debt Germany @ 6% and transfers €40m to the U.S. subsidiary in Germany.

Every year the U.S. subsidiary in Germany would submit €2.4m (€40m @ 6% - instead of borrowing at 7%) to its parent company in U.S., which would transfer the money to the Swap Bank, which transfers funds to the German MNC to pay the Euro loan. The German subsidiary in U.S. would submit \$4.16m (\$52m @ 8% - instead of 9% on its own) to the German MNC, which would transfer the money to the Swap Bank, and the bank would transfer funds to the U.S. MNC to pay for the dollar loan. At maturity, principal payments would take place the same way.

Each company saves 1% per year on \$52million (€40m), or \$520,000 annually (€400,000), or \$2.6m (€2m) over 5 years!

Currency swap not only saves interest expense, but locks in three ex-rates and eliminates ex-rate risk:

1. Principal sums are exchanged now at the current ex-rate, $\$52m/€40m = \$1.30/€$.
2. The contractual (implicit) exchange rate for the annual payments would be $\$1.733/€$, since the payments exchanged are: $\$4.16m / €2.40m = \$1.7330/€$.
3. The implied exchange at maturity for the last interest payment and principal payment is $\$56.16m (\$52m \text{ principal} + \$4.16m \text{ interest}) / €42.40m (€40m \text{ principal} + €2.40m \text{ interest}) = \$1.3245 /€$. Therefore, the currency swap locks in a fixed exchange rate for YRS 1-4 and another ex-rate for YR 5, and there is **no currency risk**.

At first it might seem like the German company is not getting as good of a deal compared to the U.S. firm. The German MNC borrows Euros at 6% but pays 8% in U.S. dollars. However, IRP should hold, making the two interest rates equal after adjusting for the expected change in the value of the currencies. Since interest rates are higher (lower) in the U.S. (Germany), the dollar (€) is expected to depreciate (appreciate), by 2% per year. German MNC pays back the loan with a currency (USD) that is depreciating (USD is depreciating by 2% per year), Euro is appreciating by 2% per year.

German MNC borrows €s @ 6%, pays loan back in USDs at 8%, but since the dollar is depreciating by 2%/year, and the euro is appreciating by 2% per year, the effective borrowing cost in Euros is 6%.

U.S. MNC borrows \$s @ 8%, pays back Euros @ 6%, but since the USD is getting weaker and euro is getting stronger by 2% annually, the effective borrowing cost in \$s is 8%.

Point: In equilibrium (IRP), if the Euro is selling at a forward premium of +2%/year, the Borrowing Euros at 6% is exactly equivalent to borrowing dollars at 8%.

What about the swap bank? In the example above, there is no profit for the Swap Bank. The US MNC still borrows \$52m in the US for 8%, and the German MNC still borrows €40m in Germany for 6%. But the swap bank makes a profit by charging the U.S. MNC a rate of 6.10% for its debt in Germany for its subsidiary, and the bank makes 0.10% each year on €40m, or €40,000 annually (\$52,000 at the current ex-rate). The swap bank charges the German MNC a rate of 8.15% for its debt in the US for its subsidiary, and makes 0.15% of \$52m, or \$78,000 annually.

Annual CFs for Swap Bank

Receive	€2,440,000 from US MNC (€40m @6.10%)
Pay	€2,400,000 to German MNC (€40m @6.00%)

MUHAMMAD MUSTAFA

MBA FROM UOS

Profit	€40,000
Receive	\$4,238,000 from German MNC (\$52m @8.15%)
Pay	<u>\$4,160,000 to US MNC (\$52m @8.00%)</u>
Profit	\$78,000

RISKS FOR THE SWAP BANK IN THE SWAP MARKET

1. Interest rate risk, from a change in interest rates before the bank finds an opposing counterparty for the other side of an interest rate swap. Swap banks that are traders stand ready to take just one side of the swap now, and then later find a client for the other side.

Example: Suppose swap bank makes deal with company B, where swap bank will receive 10.50% from Co. B. They hope to find a customer like Bank A, and make fixed rate payment of 10.375%, and the swap bank makes 12.5 bp or .125%. If rates rise by only .50% before they finalize deal with Bank A, they would have to pay out 10.875% to Bank A (instead of 10.375%), and the swap bank would lose money.

2. Basis risk, when the floating rates are NOT pegged to the same index. *Example:* One counterparty's payments are pegged to LIBOR and the other to the U.S. T-Bill rate. When the two interest rate indexes do not move perfectly together, the swap could periodically be less profitable, or even unprofitable for the bank.

3. Ex-rate risk, like interest rate risk, from changes in ex-rates during the time it takes to offset the position with an opposing counterparty.

4. Mismatch risk, from a mismatch with respect to the size of the principal sums of the two counterparties, the maturity date, or the debt service dates. In Example above, we assumed that both the German and U.S. MNCs wanted debt for the same maturity (5-year), we assumed that the debt was the same for both MNCs: \$52m (€40m), and we assumed the payments are made on the same date.

5. Political risk, from foreign exchange controls or taxes on capital flows, other political problems that affect the swap, resulting in loss of profits for the bank.

To facilitate trading and make the swap market more efficient, there is an international swap organization, International Swaps and Derivatives Association (ISDA), which acts to coordinate swap activities, disseminate information, etc. The ISDA has developed two standard swap agreements/contracts, one for interest rate swaps and one for currency swaps, that outline the terms and conditions of a standard swap, address issues like default, early termination, etc.

EFFICIENCY ISSUES OF SWAPS

Issue: Does the existence of a market for swaps indicate market inefficiency? Does the QSD (quality spread differential) imply mispricing of default risk premiums on some debt? Does a QSD imply that there are arbitrage opportunities from exploiting interest rate discrepancies?

If QSD did represent mispricing of debt, you would expect that the swap market would disappear over time due to arbitrage. Just the opposite has happened, the swap market has exploded.

Explanation: The credit/currency/stock markets are efficient for securities that are traded, but there is a problem of “Market Completeness” - all types of debt are not always available for all types of borrowers. Swaps are an innovative, creative way to meet the demand for unique credit needs that are not met in standard, traditional credit markets. There are gains to trade (exchange) for both counterparties, and the swap banks create a market by acting as financial intermediaries, for a fee, to bring together the two counterparties.

FINAL ISSUES

1. Swaps are off-book transactions for both counterparties and the swap bank - they do not appear as either assets or liabilities on the balance sheet, they are included in the footnotes of financial reports.
2. Swaps are important source of revenue for international banks, e.g. \$128 trillion in Interest Rate Swaps x .125% average swap bank fee = \$16 billion in income.
3. Banks have to meet internationally standardized capital requirements/standards, on a risk-adjusted basis. Guidelines are now in place for how to treat swaps, since they are off-balance-sheet activities, but can increase risk for banks.

REVIEW QUESTIONS

1. Discuss how interest rate swaps and currency swaps might be of value to the corporate finance manager.
2. **Mali Yetu** company, a London based company has

6.4: TRANSLATION EXPOSURE MANAGEMENT

Translation (accounting) exposure arises from the need to, for purposes of reporting and consolidation, to convert the financial statements of foreign operations from the local currency (LC) involved to the home currency (HC). If exchange rates have changed since the previous reporting period, this translation, or restatement, of those assets, liabilities, revenues, expenses, gains and losses that are denominated in foreign currencies will result in foreign exchange gains or losses.

The most common means of protecting against translation exposure is balance sheet hedging. This involves attempting equalize exposed assets and liabilities. For example, a company may try to reduce its foreign currency denominated assets if it fears a devaluation of the overseas currency, by running down cash balances, chasing debtors and reducing stock levels. At the same time it might increase its liabilities by borrowing in the local currency and slowing down payment to creditors. If it can equate its foreign currency assets and liabilities then it will have no net exposure to changes in exchange rates.

Asset-Liability Management- involves choosing the different currencies in which the assets and liabilities of a company are denominated. Essentially assets should be in strong currencies and liabilities in weak currencies. This is an example of balance sheet hedge.

MEASURING TRANSLATION EXPOSURE

The translation of subsidiaries' financial statements from their functional currencies into reporting currency give rise to translation gain or loss if there has been exchange rate changes within the period covered by the translated financial statements. Such a gain or loss is the quantity of risk/ exposure to which such a group is/ was exposed.

How ever, home-country and the entire financial community are interested in home-currency values, the foreign currency balance-sheet accounts and income statement must be assigned home currency values. In particular, the financial statements of an MNC's overseas subsidiaries must be translated from local currency to home currency prior to consolidation with the parent's financial statements.

Translation exposure is simply the difference between exposed assets and exposed assets. The controversies to among accountants center on which assets and liabilities are exposed and on when accounting –driven foreign exchange gains and losses should be recognized (reported on income statement). The crucial point to realize in putting these controversies in perspective is that such gains or losses are of an accounting nature-that is , no cash flows are necessarily involved.

Four principal translation methods are available: - the current/non-current method, the monetary/non-monetary method, the temporal method and the current rate method

Current/Non-current method

With this, all the foreign subsidiary's current assets and liabilities are translated into home currency at the current exchange rate. Each non-current asset or liability is translated at its historical exchange rate, that is, at the rate in effect at the time the asset was acquired or liability incurred. Hence, a foreign subsidiary with positive local-currency working capital will give rise to a translation loss (gain) from devaluation (revaluation) with the current/non-current method, and vice versa if working capital is negative.

The income statement is translated at the average exchange rate of the period, except for those revenues and expense items associated with non-current assets or liabilities. The latter items, such as depreciation expense, are translated at the same rates as the corresponding balance-sheet items. Thus, it is possible to see different revenue and expense items with similar maturities being translated at different rates.

Monetary/Non-monetary method

The monetary/non-monetary method differentiates between monetary assets and liabilities-that is, those items that represent a claim to receive, or an obligation to pay, a fixed amount of foreign currency units-and non-monetary, or physical, assets and liabilities.

Monetary items (for example, cash, accounts payable and receivable, and long-term debt) are translated at the current rate; non-monetary items (for example, Inventory, fixed assets, and long-term investments) are translated at historical rates.

Income statement items are translated at the average exchange rate during the period, except for revenue and expense items related to non-monetary assets and liabilities.

The latter items, primarily depreciation expense and cost of goods sold, are translated at the same rate as the corresponding balance-sheet items. As a result, the cost of goods sold may be translated at a rate different from that used to translate sales.

Temporal method

This appears to be a modified version of the monetary/non-monetary method. The only difference is that under the monetary/non-monetary method, inventory is always translated at the historical rate. Under the temporal method, inventory is normally translated at the historical rate, but it can be translated at the current rate if the inventory is shown on the balance sheet at market values. Despite the similarities, however, the theoretical basis of each method is different. The choice of exchange rate for translation is based on the type of asset or liability in the monetary/non-monetary method; in the temporal method, it is based on the underlying approach to evaluating cost (historical versus market).

Income statement items are normally translated at an average rate for the reporting period. However, cost of goods sold and depreciation and amortization charges related to balance sheet items carried at past prices are translated at historical rates.

Current rate method

The current rate method is the simplest; all balance sheet and income items are translated at the current rate. Under this method, if a firm's foreign-currency denominated assets exceeds its foreign-currency denominated liabilities, devaluation must result in a loss and a revaluation, in a gain. One variation is to translate all assets and liabilities except net fixed assets at the current rate.

International Accounting Standard (IAS) 21 (**The Effects of Changes in Exchange Rate**) is discussing in detail the techniques and methods of translating financial statements.

Please read it.

HEDGING TRANSLATION EXPOSURE

The most common means of protecting against translation exposure is *balance sheet hedging*. This involves attempting to equalize exposed assets and liabilities, E.g. a company may try to reduce its foreign currency denominated assets if it fears a devaluation of the overseas currency,

by running down cash balances, chasing debtors and reducing stock levels. At the same time it might increase its liabilities by borrowing in the local currency and slowing down payment to creditors. If it can equate its foreign assets and liabilities then it will have no exposure to changes in exchange rates.

Summary of Basic hedging techniques

• Depreciation	• Appreciation
• Sell local currency forward	• Buy local currency forward
• Reduce levels of local currency cash and marketable securities	• Increase levels of local currency cash and marketable securities
• Tighten credit (reduce local currency receivable)	• Relax local currency credit terms
• Delay collection of hard currency (likely to appreciate) receivable	• Speed up collection of soft currency (likely to depreciate) receivables
• Increase the import of hard currency goods	• Reduce imports of soft currency goods
• Borrow locally	• Reduce local borrowing
• Delay payment of accounts payable	• Speed up payment of accounts payable
• Speed up dividend and fee remittances to parent and other subsidiary	• Delay dividend and fee remittances to parent and other subsidiaries
• Speed up payment of inter-subsiary accounts payable	Delay payment of inter-subsiary accounts receivable
• Delay collection of inter-subsiary accounts receivable	Speed up collection of inter-subsiary accounts receivable
• Invoice exports in foreign currency and imports in local currency	Invoice exports in local currency and imports in foreign currency

DOES TRANSLATION EXPOSURE MATTER?

- Cash flow perspective-** translating financial statements for consolidated reporting purposes does not by itself affect a cash flow.
- **Stock price perspective-** since a MNC's translation exposure affects its consolidated earnings and many investors tend to use earnings when valuing firms, the MNC's valuation may be affected.

6.5: ECONOMIC/OPERATING EXPOSURE MANAGEMENT

Economic Exposure relates to the possibility that the value of the company (the Present Value of all future cash flows) will change due to unexpected changes in future exchange rates. Its magnitude is difficult to measure as it considers unexpected changes in exchange rates. Even purely domestic firms may be affected by economic exposure if there is foreign competition within the local markets.

Economic exposure is also known as operating, competitive and strategic exposure. The reason is because operating exposure reflects the economic consequences that changes in exchange rate may have on the operating income of the firm and must deal with both strategic and competitive responses to these unexpected changes.

Measuring Economic Exposure

Consider the example of a British firm, which operates a subsidiary in country, which unexpectedly devalues its currency. This could be 'bad news' in that every local currency unit of profit earned would now be worth less when repatriated to the UK. On the other hand, it could be 'good news' as the subsidiary might now find it far easier to export to the rest of the world and hence significantly increase its contribution to parent company cash flow. The news could, alternatively, be neutral if the subsidiary intended to ration its profits to re-invest in the same country abroad.

MANAGING ECONOMIC EXPOSURE

(a) Economic Effects of Unanticipated Exchange Rate Changes on Cash Flows

From this analytical framework, some practical implications emerge for the assessment of economic exposure. First of all, the firm must project its cost and revenue streams over a planning horizon that represents the period of time during which the firm is "locked-in," or constrained from reacting to (unexpected) exchange rate changes. It must then assess the impact of a deviation of the actual exchange rate from the rate used in the projection of costs and revenues.

STEPS IN MANAGING ECONOMIC EXPOSURE

1. Estimation of planning horizon as determined by reaction period.
2. Determination of expected future spot rate.
3. Estimation of expected revenue and cost streams, given the expected spot rate.

4. Estimation of effect on revenue and expense streams for unexpected exchange rate changes.
5. Choice of appropriate currency for debt denomination.
6. Estimation of necessary amount of foreign currency debt.
7. Determination of average interest period of debt.
8. Selection between direct or indirect debt denominations.
9. Decision on trade-off between arbitrage gains vs. exchange risk stemming from exposure in markets where rates are distorted by controls.
10. Decision about "residual" risk: consider adjusting business strategy.

Subsequently, the effects on the various cash flows of the firm must be netted over product lines and markets to account for diversification effects where gains and losses could cancel out, wholly or in part. The remaining net loss or gain is the subject of economic exposure management. For a multiunit, multiproduct, Multinational Corporation the net exposure may not be very large at all because of the many offsetting effects. By contrast, enterprises that have invested in the development of one or two major foreign markets are typically subject to considerable fluctuations of their net cash flows, regardless of whether they invoice in their own or in the foreign currency.

For practical purposes, three questions capture the extent of a company's foreign exchange exposure.

1. How quickly can the firm adjust prices to offset the impact of an unexpected exchange rate change on profit margins?
2. How quickly can the firm change sources for inputs and markets for outputs? Or, alternatively, how diversified are a company's factor and product markets?
3. To what extent do volume changes, associated with unexpected exchange rate Changes, have an impact on the value of assets?

Normally, the executives within business firms who can supply the best estimates on these issues tend to be those directly involved with purchasing, marketing, and production. Finance managers who focus exclusively on credit and foreign exchange markets may easily miss the essence of corporate foreign exchange risk.

(b) Financial versus operating strategies for hedging.

When operating (cash) inflows and (contractual) outflows from liabilities are affected by exchange rate changes, the general principle of prudent exchange risk management is: any effect

on cash inflows and outflows should cancel out as much as possible. This can be achieved by maneuvering assets, liabilities or both. When should operations -- the asset side -- be used?

We have demonstrated that exchange rate changes can have tremendous effects on operating cash flows. Does it not therefore make sense to adjust operations to hedge against these effects? Many companies, such as Japanese auto producers, are now seeking flexibility in production location, in part to be able to respond to large and persistent exchange rate changes that make production much cheaper in one location than another. Among the operating policies are the shifting of markets for output, sources of supply, product-lines, and production facilities as a defensive reaction to adverse exchange rate changes. Put differently, deviations from purchasing power parity provide profit opportunities for the operations-flexible firm. This philosophy is epitomized in the following quotation.

It has often been joked at Philips that in order to take advantage of currency movements, it would be a good idea to put our factories aboard a supertanker, which could put down anchor wherever exchange rates enable the company to function most efficiently...In the present currency markets... [This] would certainly not be a suitable means of transport for taking advantage of exchange rate movements. An aero plane would be more in line with the requirements of the present era.

The problem is that Philips' production could not fit into either craft. It is obvious that such measures will be very costly, especially if undertaken over a short span of time. It follows that operating policies are *not* the tools of choice for exchange risk management. Hence operating policies which have been designed to reduce or eliminate exposure will only be undertaken as a last resort, when less expensive options have been exhausted.

Techniques for Managing Economic Exposure

Although economic exposure is difficult to measure it is of vital importance to firms as it concerns their long-term run viability.

The usual techniques of managing (protecting) economic exposure are as follows.

(a) Diversification of production and supply

If a firm manufactures all its products in one country and that country's exchange rate strengthens, then the firm will find it increasingly difficult to export to the rest of the world. Its future cash flows and therefore its present value would diminish. However, if it had established production plants worldwide and bought its components worldwide, it is unlikely that the currencies of all its operations would revalue at the same time. Many multinational companies like Ford practice this policy.

It would therefore find that, although it was losing exports from some of its manufacturing locations, this would not be the case in all of them. Also if it had arranged to buy its raw

materials worldwide it would find that a strengthening home currency would result in a fall in its input costs and this would compensate for lost sales.

(b) Diversification of financing

When borrowing internationally, firms must be aware of foreign exchange risk. When, for example, a firm borrows in Swiss francs it must pay back in the same currency. If the Swiss franc then strengthens against the home currency this can make interest and principal repayment far more expensive. However, if borrowing is spread across many currencies it is unlikely they will all strengthen at the same time and therefore risks can be reduced. Borrowing in foreign currency is only truly justified if returns will then be earned in that currency to finance repayment and interest.

International borrowing can also be used to hedge off the adverse economic effects of local currency devaluations. If a firm expects to lose from devaluations of the currencies in which its subsidiaries operate it can hedge off this exposure by arranging to borrow in the weakening currency. Any losses on operations will then be offset by cheaper financing costs.

Relative importance of different types of exposure to companies

Transaction and **economic** exposure both have cash flow consequences for the firm and they are therefore considered to be extremely important. Economic exposure is really the long-run equivalent of transaction exposure and ignoring either of them could lead to reductions in the firm's future cash flows or an increase in the systematic risk of the firm, both resulting in a fall in shareholder wealth. Both of these exposures should therefore be protected against.

The importance of **translation** exposure to international finance is, however, often questioned. In international finance terms we must ask the question 'does a translation loss reduce shareholder wealth?' the answer is that it is unlikely to be of consequence to shareholders who should, in an efficient market, value shares on the basis of the firm's future cash flows, not on asset values in published accounts. Unless management feels that translation losses will greatly upset the shareholders there would seem little point in protecting against them.

CONTROLLING CORPORATE TREASURY TRADING RISKS

In a corporation, there is no such thing as being perfectly hedged. Not every transaction can be matched, for international trade and production is a complex and uncertain business. As we have seen, even identifying the correct currency of exposure, the currency of determination, is tricky. Flexibility is called for, and management must necessarily give some discretion, perhaps even a lot of discretion, to the corporate treasury department or whichever unit is charged with managing foreign exchange risks. Some companies, feeling that foreign exchange is best handled by professionals, hire ex-bank dealers; other groom engineers or accountants. Yet however talented and honorable are these individuals, it has become evident that some limits

must be imposed on the trading activities of the corporate treasury, for losses can get out of hand even in the best of companies.

In 1992 a *Wall Street Journal* reporter found that Dell Computer Corporation, a star of the retail PC industry, had been trading currency options with a face value that exceeded Dell's annual international sales, and that currency losses may have been covered up. A complex option trading was in part responsible for losses at the treasury of Allied-Lyons, the British foods group. The \$150 million lost almost brought the company to its knees, and the publicity precipitated a management shake-out. In 1993 the oil giant Royal Dutch-Shell revealed that currency trading losses of as much as a billion dollars had been uncovered in its Japanese subsidiary.

Clearly, performance measurement standards, accountability and limits of some form must be part of a treasury foreign currency hedging program. Space does not permit a detailed examination of trading control methods, but some broad principles can be stated.

First, management must elucidate the goals of exchange risk management, preferably in operational terms rather than in platitudes such as "we hedge all foreign exchange risks."

Second, the risks of in-house trading (for that's often what it is) must be recognized. These include losses on open positions from exchange rate changes, counterparty credit risks, and operations risks.

Third, for all net positions taken, the firm must have an *independent* method of valuing, marking-to-market, the instruments traded. This marking to market need not be included in external reports, if the positions offset other exposures that are not marked to market, but is necessary to avert hiding of losses. Wherever possible, marking to market should be based on external, objective prices traded in the market.

Fourth, position limits should be made explicit rather than treated as "a problem we would rather not discuss." Instead of hamstringing treasury with a complex set of rules, limits can take the form of prohibiting positions that could incur a loss (or gain) beyond a certain amount, based on sensitivity analysis. As in all these things, any attempt to cover up losses should reap severe penalties.

Finally, counterparty risks resulting from over-the-counter forward or swap contracts should be evaluated in precisely the same manner as is done when the firm extends credit to, say, suppliers or customers.

In all this, the chief financial officer might well seek the assistance of an accounting or consulting firm, and may wish to purchase software tailored to the purposes

CONCLUSIONS

This chapter offers the reader an introduction to the complex subject of the measurement and management of foreign exchange risk. We began by noting some problems with interpretation of the concept, and entered the debate as to whether and why companies should devote active managerial resources to something that is so difficult to define and measure.

Accountants' efforts to put an objective value on a firm involved in international business has led many to focus on the translated balance sheet as a target for hedging exposure. As was demonstrated, however, there are numerous realistic situations where the economic effects of exchange rate changes differ from those predicted by the various measures of translation exposure. In particular, we emphasized the distinctions between the currency of location, the currency of denomination, and the currency of determination of a business.

After giving some guidelines for the management of economic exposure, the chapter addressed the thorny question of how to approach currency forecasting. We suggested a market-based approach to international financial planning, and cast doubt on the ability of the corporation's treasury department to outperform the forward exchange rate.

The chapter then turned to the tools and techniques of hedging, contrasting the applications that require forwards, futures, money market hedging, and currency options.

TOPIC6: THE GLOBAL INVESTMENT AND FINANCING DECISION

6. I: FOREIGN DIRECT INVESTMENT (FDI)

Foreign direct investment (FDI) is defined as a long-term investment by a foreign direct investor in an enterprise resident in an economy other than that in which the foreign direct investor is based.

Or FDI can be simply defined as an investment made to acquire a lasting interest in an enterprise operating in a country other than that of investor. In this instance the investor has an effective voice or control in the management of the enterprise. What % of shares ownership can constitute an effective voice is still an open question.

The FDI relationship consists of a parent enterprise and a foreign affiliate, which together form a transnational corporation (TNC).

Foreign direct investment, in its classic definition, can also be defined as a company from one country making a physical investment into building a factory in another country. The direct investment in buildings, machinery and equipment is in contrast with making a portfolio investment, which is considered an indirect investment.

In recent years, given rapid growth and change in global investment patterns, the definition has been broadened to include the acquisition of a lasting management interest in a company or

enterprise outside the investing firm's home country. As such, it may take many forms, such as a direct acquisition of a foreign firm, construction of a facility, or investment in a joint venture or strategic alliance with a local firm with attendant input of technology, licensing of intellectual property, in the past decade, FDI has come to play a major role in the internationalization of business. Reacting to changes in technology, growing liberalization of the national regulatory framework governing investment in enterprises, and changes in capital markets profound changes have occurred in the size, scope and methods of FDI.

In order to qualify, as FDI the investment must afford the parent enterprise control over its foreign affiliate. The United Nations defines control in this case as owning 10 percent or more of the ordinary shares or voting power of an incorporated firm or its equivalent for an unincorporated firm.

Direct investment is a category of international investment that, based on an equity ownership of at least 10%, reflects a lasting interest by a resident in one economy (the direct investor) in an enterprise resident in another economy (the direct investment enterprise). A direct investment relationship can exist between a numbers of affiliated enterprises whether the linkage involves a single chain or a number of chains. It can extend to a direct investment enterprise's subsidiaries, sub-subsidiaries and associates. Once the direct investment relationship is established, all subsequent financial flows between the related entities are recorded as direct investment transactions.

In the years after the Second World War global FDI was dominated by the United States, as much of the world recovered from the destruction brought by the conflict. The US accounted for around three-quarters of new FDI (including reinvested profits) between 1945 and 1960. Since that time FDI has spread to become a truly global phenomenon, no longer the exclusive preserve of OECD (Organization for economic co-operation development) countries (commission of European community takes part in the work of OECD). FDI has grown in importance in the global economy with FDI stocks now constituting over 20 percent of global GDP.

In the last few years, the emerging market countries such as China and India have become the most favored destinations for FDI and investor confidence in these countries has soared. As per the FDI Confidence Index compiled by A.T. Kearney for 2005, China and India hold the first and second position respectively, whereas United States has slipped to the third position.

What would be some of the basic requirements for companies considering a foreign investment?

Depending on the industry sector and type of business, a foreign direct investment may be an attractive and viable option. With rapid globalization of many industries and vertical integration rapidly taking place on a global level, at a minimum a firm needs to keep abreast of global trends in their industry.

From a competitive standpoint, it is important to be aware of whether a company's competitors are expanding into a foreign market and how they are doing that. At the same time, it also becomes important to monitor how globalization is affecting domestic clients. Often, it becomes imperative to follow the expansion of key clients overseas if an active business relationship is to be maintained.

Understanding the roles of Foreign Direct Investment (FDI)

Foreign direct investment (FDI) plays an extraordinary and growing role in global business. It can provide a firm with new markets and marketing channels, cheaper production facilities, access to new technology, products, skills and financing. For a host country or the foreign firm which receives the investment, it can provide a source of new technologies, capital, processes, products, organizational technologies and management skills, and as such can provide a strong impetus to economic development.

New information technology systems, decline in global communication costs have made management of foreign investments far easier than in the past. The sea change in trade and investment policies and the regulatory environment globally in the past decade, including trade policy and tariff liberalization, easing of restrictions on foreign investment and acquisition in many nations, and the deregulation and privatization of many industries, has probably been the most significant catalyst for FDI's expanded role.

The most profound effect has been seen in developing countries, where yearly foreign direct investment flows have increased from an average of less than \$10 billion in the 1970's to a yearly average of less than \$20 billion in the 1980's, to explode in the 1990s from \$26.7 billion in 1990 to \$179 billion in 1998 and \$208 billion in 1999 and now comprise a large portion of global FDI. Driven by mergers and acquisitions and internationalization of production in a range of industries, FDI into developed countries last year rose to \$636 billion, from \$481 billion in 1998 (Source: UNCTAD)

Proponents of foreign investment point out that the exchange of investment flows benefits both the home country (the country from which the investment originates) and the host country (the destination of the investment). Opponents of FDI note that multinational conglomerates are able to wield great power over smaller and weaker economies and can drive out much local competition. The truth lies somewhere in the middle.

For small and medium sized companies, FDI represents an opportunity to become more actively involved in international business activities. In the past 15 years, the classic definition of FDI as noted above has changed considerably. This notion of a change in the classic definition, however, must be kept in the proper context. Very clearly, over 2/3 of direct foreign investment is still made in the form of fixtures, machinery, equipment and buildings.

Moreover, larger multinational corporations and conglomerates still make the overwhelming percentage of FDI. But, with the advent of the Internet, the increasing role of technology,

loosening of direct investment restrictions in many markets and decreasing communication costs means that newer, non-traditional forms of investment will play an important role in the future. Many governments, especially in industrialized and developed nations, pay very close attention to foreign direct investment because the investment flows into and out of their economies can and does have a significant impact.

Alternatives to FDI

An MNC's effort to increase international business can also be achieved by the following methods:-

- (a) **Licensing:** this is an alternative to FDI by which overseas producers are given rights to use the licensor's production process in return for royalty payments. In many cases licensing is used by firms confronted with high export barriers. It may even take place in countries where subsidiaries exist, as it can allow for further business expansion.

Licensing has the following advantages

- It can allow rapid penetration of overseas market
- It does not require substantial financial resources
- Political risks are reduced since the licensee is likely to be a local company
- Licensing may be a possibility where direct investment is restricted by a country
- Since exporting is not necessary, transportation costs are avoided.

Licensing has the following disadvantages

- It is difficult to ensure quality of the local firm's production process
- Technology secrets provided to the local firms may leak out to competitive firms in that country.
- The agreement may give to the licensee know how and technology which it can use in competing with the licensor after the licensee agreement has expired.
- The local firm in the host country may attempt to export the goods to another country, which may reduce sales of the licensing corporation.

(b) Joint venture:

The two firms could combine to create a product in Tanzania that could not be created by either involving firms. Many MNCs engage in joint venture.

There are two distinctive types of joint venture

- Industrial cooperation (contractual): This is for a fixed period and the duties and responsibilities of the parties are contractually defined.

- Joint equity venture: Involves investment, is of no fixed duration and continually evolves.

The advantages of joint venture are as follows

- Market access
- Improved access to technology
- Aid in obtaining government approvals, local currency loans, tax incentives and assurance of exports
- Obtain local capital and management
- Obtain assured source of raw materials
- Economies of scale in product development and production

The disadvantages of joint venture are as follows

- Disagreements over: marketing programs, dividend policy, reinvestment of earnings and management expansion and remunerations
- Share profits based on monopoly rents from technology, marketing and management capabilities.

(c) **Exporting:** This is safe way to break into a new market since there is less to lose if the strategy fails. The initial cost of producing at home and exporting is low relative to establishing a subsidiary.

(d) **Management contract:** where a firms agree to sell its management skills

MOTIVES FOR FDI

If an MNC attempts to increase its international business through direct foreign investment, it must decide where to establish a new subsidiary. A firm seeking to maximize shareholders wealth may find it is worthwhile to increase their foreign business. There are several possible motives for a corporation becoming more internationalized. These are reasons why a parent company might want to set up subsidiary companies in other countries. One of the most important aspects of global financing strategy is to gain access to a broad range of fixed sources to lessen dependence on any one single source. Some of the popular motives are:-

- (a) **Attract new sources of demand:** corporations often reach a stage where growth is limited in their home country. This may be due to intense competition for the product they sell. Thus, possible solution is to consider foreign markets where there is potential demand.
- (b) **Enter markets where excessive profits are available:** if other corporations within the industry have proven that excessive earnings can be realized in other markets, an MNC may also decide to sell in that market. But a problem of barriers to entry exists such as lowering prices by competitors.
- (c) **Full benefit from economies of scale:** The Corporation that attempts to sell its primary product in new markets may increase its earnings and shareholders wealth due to economies of scale. Such motive is more likely for firms that utilize much machinery.
- (d) **Use foreign factors of production:** labor and land costs vary dramatically among countries. MNCs often attempt to set up production in a location where land and labor are cheap. Due to market imperfections such as imperfect information, relocation transactions costs, barriers to industry entry by firms etc, specific labor costs will not necessary become equal among markets.
- (e) **International diversification:** The firm may reduce its cash flow variability by diversifying its product mix. Any decrease in net cash flows due to reduced demand for some of its products may be somewhat offset by an increase in other net cash flows resulting from increased demand for its other products.
- (f) **React to trade restrictions:** In some cases, an MNC uses FDI as a defensive strategy rather than aggressive strategy. For example, Japanese automobile manufacturers established plants in the USA in anticipation that their exports to the US would be subject to more stringent trade restrictions.
- (g) **Benefit politically:** Some MNCs based in politically unstable countries attempt to expand in other more stable countries. In addition, MNCs based in countries with growing socialism pursue other markets in which they have greater flexibility to make business decisions. These political motives are especially applicable to MNCs in LDCs.
- (h) **React to foreign currency's changing value:** when a foreign currency is perceived by a firm to be undervalued, the firm may consider direct foreign investment in that country. The initial outlay should be relatively low. If the currency strengthens over time, the earnings remitted to the parent may increase.

THEORIES OF FOREIGN DIRECT INVESTMENT

Certain theories have attempted to address limitations of international trade theories under FDI. The selected theories are discussed as below:-

(a) The Differential rate of Return Theory

This theory was popular in the late 1950's. It argues that, if expected marginal revenues are higher abroad than at home, given the same marginal cost of capital for investment at home and abroad, there is an incentive to invest abroad. This theory assume basically that FDI is simply an international capital movement and it does not recognize that DI is more than that, in addition,

this theory cannot explain why some countries are experiencing simultaneous inflow and out flows of FDI, and empirical studies have not produced conclusive evidence to support the theory.

(b) The product cycle theory

Employ the notion that most products follow the notion of product life cycle. First, new products are introduced in the domestic market as innovation and eventually they are completely standardized, thereby becoming an easier target for competition. FDI takes place as firms, facing saturation of the domestic market as the product matures, expand overseas and capture the remaining rents from development of the product. In addition, overseas expansion follows a certain geographical sequence according to the firms' familiarity with the markets. This hypothesis first introduced by US DFI as well as UK and German experience. However, more recent evidence shows that firms introduce new products at home and abroad almost simultaneously. And the innovations do not necessarily start at home.

Hymer (1976) argued that the very existence of multinational firms rest on the monopolistic market imperfections arising from structural imperfection and transactions cost imperfections. The recognition of these two sources of imperfections has led to the development of two theories, the industrial organization theory and the internationalization theory of FDI

(c) The industrial organization theory (monopolistic market theory)

Argues that, despite unfavorable conditions abroad for foreign entrants, multinational firms do have net advantage in competing against local firms because they have brand name products, superior technology, market know how, cheaper financial costs and economies of scale.

(d) Internationalization Theory

Argues that FDI is a result of replacing market transactions with internal transactions. The need for such replacement arises when the entrant firms face greater imperfections in the foreign markets for intermediate inputs. From acquisition of inputs, to the delivery of output to customers, there are a number of transactions to be performed with outsiders (unaffiliated) units as well as with insiders (affiliates) of a firm. By replacing outsiders' transaction with insider transactions, a firm may reduce transaction costs, particularly when the market is imperfect

The benefits include avoidance of many stage negotiations, delays and market uncertainty, minimizing of government intervention through transfer pricing and changes of sourcing and the ability to exercise discrimination pricing.

(e) The currency Area Theory

Advanced by Aliber 1970, and Heller 1981, argues that the pattern of FDI depends on the relative strength of various currencies. The stronger the currency of a certain country, the more likely is that firm from that country will invest in the domestic market.

The strength of the currency is determined by the size of the capital market denomination in this currency its exchange rate risks, the extent of over valuation of the currency and the markets preference for holding assets in the currency. Empirical studies in line with this hypothesis have focused on testing whether or over valuation of a currency country and an under valuation of a currency has caused inflows of DI from abroad.

(f) The market area Theory

Postulates that, the market size measured by, either sales volume of the companies or income in the host country is the source of incentives to make FDI. The available data is in consistent with this hypothesis in terms of significance of correlation, can also be interpreted to be superfluous.

Other FDI theories, custom area hypothesis which argues that, because of preferential treatment of the member countries within the custom area, firms outside the customs area tend to make FDI in the area in order to substitute international trade.

FDI and Growth of Multinationals

Multinational company (MNC) is defined as one which generates at least 25% of its sales from activities in countries other than its own. MNCs originated in the latter part of the 19th century, principally in German and the USA. They reached their present dominant position largely in the years after the Second World War, following the great expansion in trade which they themselves did much to promote.

The importance of MNCs

The activities of MNCs are of major importance because of their size and the increasingly preponderant part they play in the world economy. The very largest have revenue greater than the GNP of most national economies except for those top countries.

Their significance is increasing all the time since they are growing (looking at the totality) at much times the rate of the world economy.

The functions of MNCs in developing countries have received particular scrutiny, their activities in these countries are often, though not exclusively, directed towards the extractive industries, oil and minerals, and agriculture.

Foreign Direct Investment in Developing Countries

Globalization and Significance of Foreign Direct Investment in LDCs

Globalization of developing countries is seen by many as the key economic trend of recent times. In a liberalizing and globalizing world economy, a growing number of countries have received significant capital flows, mainly in form of foreign direct investment. As the remarkable growth of cross-border foreign direct investment flows has been associated with the general trends in globalization, this section reviews the relevant key issues, such as the salient features of financial liberalization, forces driving globalization or integration of developing countries into the global economy, and the significance of foreign direct investment flows on the recipient countries.

A. Globalization and Financial Liberalization in Developing Countries

The international financial liberalisation¹ (which involves opening the capital account) has increased over the last three decades, and the industrial countries have been liberalizing their capital accounts early on. However, in developing countries, the shift toward capital account liberalization in general was slow, and many countries' private international financial transactions did not increase substantially until the early 1990s (IMF, 2001)

A distinctive feature of the world economy in recent decades has been the growth of foreign direct investment, or investment by multinational firms in foreign countries in order to control assets and manage production activities in those countries. Hence, multinational corporations, in the context of a liberalizing world economy, played an essential role in the globalization process by undertaking mergers and acquisitions activities. As a result, the cross-border mergers and acquisitions, particularly majority ownership transactions, surged worldwide during the 1990s. Mergers and acquisitions activities (including private-to-private transactions as well as acquisitions through privatization, which increased significantly in developing countries) also became an increasingly important vehicle for foreign direct investment to developing countries during the 1990s surge, particularly in comparison to the low level of mergers and acquisitions activities in these countries during the 1980s. The share of developing countries in global majority-owned, cross-border mergers and acquisitions sales rose significantly in the early 1990s.

B. Significance of Foreign Direct Investment on Developing Countries

It has been increasingly recognized that growing foreign direct investment inflows can

MUHAMMAD MUSTAFA

MBA FROM UOS

contribute to economic development and promise a variety of potential benefits to poor country

Mega Lecture

recipients. Due to the potential role foreign direct investment can play in accelerating growth and economic transformation, many developing countries seek such investment to accelerate their development efforts. Consequently, foreign direct investment has become an important source of private external finance for developing countries.

The foreign direct investment can increase growth in two ways. The investment increases total investment by attracting higher levels of domestic investment. Also, through interaction of the more advanced technology with the host country's human capital, foreign direct investment is more productive than domestic investment.

Indeed, the most significant channel through which foreign direct investment contributes to productivity growth is perhaps increased access to technology, through market transactions such as joint ventures, licensing, and goods trade.

While foreign direct investment represents investment in production facilities, its significance for developing countries is much greater. Not only can foreign direct investment add to investible resources and capital formation, but, perhaps more important, it is also a means of transferring production technology, skills, innovative capacity, and organizational and managerial practices between locations, as well as of accessing international marketing networks. In addition, the foreign direct investment can improve overall growth by promoting competition in the domestic input market.

In particular, the foreign investment could increase competition in the host-country industry, and hence force local firms to become more productive by adopting more efficient methods or by investing in human and/or physical capital. Multinational firms' large size, advanced technology, and advertising expertise often enable them to invest in industries in which barriers to entry, such as large capital requirements coupled with trade restrictions, reduce the access of potential local competitors.

Multinational corporations can promote the transfer of technology, with possible spillovers to the rest of the host economy or domestic firms. Technology spillover is a channel through which capital account liberalization can have a positive impact. These spillovers are most clear in the case of foreign direct investment, especially through foreign firms incorporating new technologies in their subsidiaries. As new technologies are generally developed and adapted by firms in industrial countries, foreign direct investment may be the most efficient way for developing economies to gain access to them. In addition, this knowledge may become more widely available in the country over time, as employees with experience in the techniques used in foreign companies switch to other firms.

Furthermore, foreign direct investment can help boost host country exports. Multinational enterprises may help developing host countries process and export locally produced raw materials, using their marketing skills, superior technology, and general know-how. They facilitate the export of local production through their distribution networks, and they often account for a significant share of host country exports.

Trends and Concentration of Foreign Direct Investment Flow

Since the early 1980s, world foreign direct investment flows have grown rapidly. Developing countries received two-thirds of the increase in foreign direct investment worldwide between the late 1980s and 1990s, a sharp change from the previous decade, when flows to industrial countries dominated. (World Bank, 2001)

In general, the composition of capital inflows to developing countries has shifted away from *bank loans* and toward *foreign direct investment and portfolio investment*. In the 1970s and 1980s, bank loans were the primary form of private capital flows to developing countries. In contrast, in the 1990s, the capital flows to developing countries have been dominated by bonds and non-debt-creating flows, namely foreign direct investment and portfolio investment. Moreover, the public sector was the most important recipient of the flows in the previous periods whereas the private agents have undertaken most of the external borrowing.

A. Factors that Attract Foreign Direct Investment in developing countries

The major recipients of foreign direct investment possess important advantages that have attracted large quantities of foreign direct investment flows. The developing countries that received the lion's share of the surge in foreign direct investment flows during the 1990s had more open policy regimes or hospitable regulatory framework, large markets, and favorable economic environment.

Privatization also appears to be an important source of foreign direct investment flows to many developing countries even during the recent financial crisis (1997-98).

B. Factors that Discourage Foreign Direct Investment in developing Countries

Country experiences indicate that while favorable economic environment and regulatory or policy framework help induce foreign direct investment flows, there are a number of forces that tend to discourage such flows. The regulatory restrictions, including tariffs, quotas, tend to discourage cross-border acquisitions by multinational enterprises. Countries that impose restrictions on foreign entry and ownership and foreign exchange transactions, as well as discriminatory tax provisions, tend to hamper foreign direct investment flows. For example, in Kenya, foreign investors face multiple licensing requirements and high withholding taxes on royalties, and foreign direct investment remained less than 0.2 percent of GDP during 1991-99.

Some of the developing countries have not achieved the improvements in the investment climate necessary to encourage higher foreign direct investment flows. While the poor prospect for growth and unfavorable economic environment have impeded the foreign direct investment flows to many countries, a number of other factors (such as the political and structural factors) have also been the important discouraging factors.

Foreign Direct Investment and country risk

Political risk: is the possibility of a loss arising to firm from action taken by the government or people of a country.

Confiscation political risk

The risk of loss of control over the foreign entity through intervention of the local government or other forces.

The financing tactics which minimizes this risk include:- high gearing, minimize intra-group sources of finances, maximize finance from local sources, avoid parent group guarantees, have the subsidiary partly owned by local shareholders.

Commercial political risk: This involves commercial discrimination against foreign controlled firms e.g. giving commercial advantages to locally owned competitors, restrict raw material licenses, refuse work permits to expatriate staff.

Financing tactics- much the same as above. In addition, creating national lobby to make the authorities sensitive to the need of the local foreign investments.

Financial risk:

This may take many forms including:- restricted local access to borrowing – particularly to the cheapest forms of finance from local banks, restrictions on repatriating capital, dividends or other remittances, financial penalties on imports from the group e.g. heavy interest-free import deposit

Management of political risks

(a) Prior to investment

- Planned local ownership- dates can be set on which proportions of company will pass to the local nationals
- Pre-trading agreements- with the local authorities regarding rights, responsibilities, remittance of funds and local equity investments

(b) During investment

- Distribution control- controlling distributions items e.g. shipping facilities will deter expropriation
- Market control- through copyrights, patents, trademarks to deter political intervention
- Supplies- using local materials and labor may be in the interest of the country

- Location- e.g. oil extracted in Iraq- refined in Europe to avoid expropriation
- Local fiancé- raise locally to maintain the interest of the authorities in the success of the business

Foreign Direct Investment in Tanzania

In 1990- a National Investment Promotion Policy was introduced, followed by the enactment of the National Investment Promotion and Protection Act (NIPPA-1990) to enhance the investment climate.

The Act established an Investment Promotion Centre (IPC) to approve, monitor and facilitate FDI as well as local investment.

In 1997- the Tanzania Investment Act was introduced to replace NIPPA and IPC was transformed into the Tanzania Investment Centre (TIC).

TIC is charged with the following functions: -

- Assist in establishment of enterprise e.g. incorporation and registration of enterprise, Obtain necessary license, work permits, approvals.
- Sort out any administrative barriers confronting both local and foreign investment
- Promote both foreign and local investment activities
- Secure investment sites and assist investors to establish EPZ projects
- Grant certificates of incentives, investment guarantees and register technology agreement for all investments which are over and above US\$ 300,000 and US\$ 100,000 for foreign and local investment respectively
- Provide and disseminate up to date information on existing investment opportunities, benefits or incentives available to investors and
- Assist all investors whether or not registered by TIC

Other measures taken by Tanzania to improve the environment for FDI include: -

- Foreign investment law protects against expropriation and guarantees investor's rights to repatriate profits, dividends, loan repayment and fees
- Establishment of the commercial court to expedite resolution of commercial disputes and facilitates enforcement of legal contracts.
- Instituting investor's Round Table (IRT) and the programmes for Business environment Strengthening in Tanzania (BEST) – for seeking investors views and providing strategic focus for the government's efforts to create conducive environment for the private sector.

The IMF's world Economic Outlook (2003) has reported that, there has been a steady increase of FDI inflows from US\$ 50 million in 1994 to US\$ 517 million in 1999 in Tanzania, since the

country started implementing the economic and institutional reforms. That is, elimination of restrictive and bureaucratic trade regimes has contributed to that increase.

Mining sector contributes to about 40% (total export) to the economy of Tanzania. This is because of low cost of production. Other incentives e.g. tax holidays offered by the 1998 mining Act.

Manufacturing and service sector together account for 35% of the FDI inflows in Tanzania. Liberalization resulted in growth of the financial sector (banking and non-banking financial services)

Conclusion

The empirical evidence suggests that in order to induce more foreign direct investment to developing countries, the countries should focus on improving the investment climate for the foreign investors by paying special attention to measures that facilitate foreign direct investment. These measures that tend to increase a country's attractiveness to multinationals engaging in foreign direct investment include creating an attractive domestic policy environment and hospitable regulatory framework for foreign investment (such as open trade regime and continued progress in privatization programs), the large market size (indicated by a country's gross domestic product), and favorable economic environment (which increases the prospect for growth) in the foreign direct investment recipient countries. Indeed, experience suggests that developing countries can increase the attractiveness to foreign direct investors by reducing the impediments to capital movements.

Review questions- FDI.

1. What is a foreign direct investment?
 - (a) Why does FDI take place?
 - (b) Explain the motives for FDI
2. Explain the theories, which postulate the FDI.
3. Outline the main economic and strategic motives for foreign direct investment (FDI) by multinational corporations.
4. A research on "Tax Incentives on Investment in Tanzania" concluded that tax holidays offered by the government of Tanzania to attract foreign investors are not really the reason behind many investors' decision to come and invest in Tanzania.

Required

Using that conclusion, **discuss reasons why** you think there should be a change in Tanzania's Investment policy

- (a) Discuss the problem of political risk in the context of foreign direct investment
 - (b) Describe briefly the policies and strategies that a company could use to mitigate the problems of political risk.
 - (c) What are the difficulties of evaluating direct foreign investment?
5. The theory of foreign direct investment hinges on the integration of theory of international capital markets, the theory of the firm and the theory of trade.

In relation to the movement of investments from one nation to another, describe the integrated theory of foreign direct investment citing examples of its impact to Tanzania.

6. Outline the main factors affecting the success of a MNC.

6.2: INTERNATIONAL CAPITAL BUDGETING DECISIONS

6.2.1 : REVIEW OF DOMESTIC CAPITAL BUDGETING

When a business makes a capital investment, it incurs a current cash outlay in the expectation of future benefits. Usually, these benefits extend beyond one year in the future. Examples include investment in assets, such as equipment, building, and land as well as the introduction of a new product, a new distribution system, or a new programme for research and development. An investment proposal should be judged in relation to whether or not it provides a return equal to, or greater than that required by investors.

Definition:

Capital budgeting may be defined as the process of identifying, analyzing and selecting investment projects whose returns are expected to extend beyond one year.

6.2.1.1 THE CAPITAL BUDGETING PROCESS

Capital budgeting involves the following issues:

- Generating investment project proposals consistent with the firm's strategic objectives
- Estimating after tax incremental operating cash flows for the investment projects

- Evaluating project incremental cash flows
- Selecting projects based on value –maximizing acceptance criterion
- Revaluating implemented projects continually and performing post-audits for completed projects.

(a) GENERATING INVESTMENT PROJECT PROPOSALS

Investment project proposals can stem from a variety of sources. For the purpose of analysis, projects may be classified into one of the following categories:

- a) New products or expansion of existing projects
- b) Replacement of equipment or buildings
- c) Research and development
- d) Exploration
- e) Safety and/or environmental projects

JOIN ME FOR EASY ACCESS TO EBOOKS & NOTES
+92-310-545-450-3
f Css Aspirants ebooks & Notes
<https://m.facebook.com/groups/458184410965870>
Css Aspirants Forum
<http://t.me/CssAspirantsForum>
Rules of the group.
*No irrelevant text/pic Islamic pic/videos
*No Smiley No Pm otherwise Removed + Blocked
*Personal text w/o Mutual consent Consider harassment.
Separate Group For Females with verification
The CSS Group does not hold any rights on shared the Books & Notes
I,m not Responsible for Copyrights.
This book/notes downloaded from the internet.

For a new product, the proposal usually originates in the marketing department. A proposal to replace a piece of equipment with a more sophisticated model, however, usually arises from the production area of the firm. In each case, efficient administrative procedures are needed for channeling investment requests. All investment requests should be consistent with corporate strategy to avoid needless analysis of projects incompatible with this strategy.

(b) ESTIMATING AFTER TAX- INCREMENTAL OPERATING CASH FLOWS

One of the most important tasks in capital budgeting is estimating future cash flows for a project. In evaluating a capital budget project we are concerned only with those cash flows that results directly from the project. These cash flows, called incremental cash flows, represent changes in the firm's total cash flows that occur as a direct result of accepting or rejecting the project.

In estimating cash flows, anticipated inflation must be taken into account. Often there is a tendency to assume erroneously that price levels will remain constant through out the life of a project. If the required rate of return for a project to be accepted embodies a premium for inflation (as it usually does), then estimated cash flows must also reflect inflation.

The illustration below, summarizes the major concerns to keep in mind as we prepare to actually determine project “after –tax incremental operating cash flows “. It provides us with a checklist for determining cash-flow estimates.

BASIC CHARACTERISTICS OF THE RELEVANT PROJECT FLOWS

- Incremental (not total) flows
- Cash (not accounting income) flows. Since cash, not accounting income is central to all decisions of the firm, we express the benefit we expect to receive from a projection terms of cash flows rather than income flows.
- Operating (not financing) flows. For each investment we used to provide information on operating as opposed to financing cash flows. Financing cash flows such as interest payments, principal payment and cash dividends are excluded from our cash flows analysis.
- After –tax flows

BASIC PRINCIPLES THAT MUST BE ADHERED TO IN ESTIMATING THE AFTER TAX INCREMENTAL OPERATING CASH FLOWS:

- Ignore sunk costs-These are uncovered past outlays which, since they cannot be recovered, should not affect present actions on future decisions.
- Include opportunity costs;-Opportunity cost may be defined as what is lost by not taking the next-best investment alternative. For instance if we allocate plant space to a project and this space can be used for something else, its opportunity cost must be included in the project's evaluation.
- Include project driven changes in working capital: net of spontaneous changes in current liabilities.

(c) Calculating the incremental cash flows

It is helpful to place project cash flows into three categories based on timing:

- I. Initial cash outlay i.e. the initial net cash investment
- II. Interim Incremental net cash flows i.e. those net cash flows occurring after the initial cash investment but not including the final period's cash flows
- III. Terminal Year Incremental Net cash flows: - this period's cash flows are singled out for special attention because a particular set of cash flows often occurs at project termination.

Initial cash outflow

In general, the initial cash outflow for a project is determined as illustrated below. As it will be seen, the cost of the asset is subject to adjustments to reflect the totality of cash flows associated with its acquisition. These cash flows include installation costs; changes in net working capital, sale proceeds from the disposition of any assets replaced and tax adjustments.

Basic Format for determining initial cash out flow

Cost of New asset

(a) + Capitalized expenditure (e.g. installation costs, shipping expense)*

(b)+(-): Increased (decreased) level of net working capital **

- Net precedes from sale of old asset if the investment is a replacement decision

+(-) Taxes (tax savings) due to the sale of old asset if the investment is a replacement decision

= Initial cash outflow

Note: *Asset cost plus capitalization expenditures for the basis upon which tax depreciation is computed.

** Any change in working capital should be considered “net” of any spontaneous changes in current liabilities that occur because the project is implemented.

Interim Incremental Net Cash Flows

After making the initial cash outflow that is necessary to begin implementing a project, the firm hopes to benefit from the future cash inflows generated by the project.

Generally, these future cash flows can be determined by the in the following procedures.

Basic format for determining interim incremental NCF (for a period)

- (a) Net increase (decrease) in operating revenue
- (b) (+) Any net increase (decrease) in operating expenses, excluding depreciation
- (c) -(+) Net increase (decrease) in tax depreciation charges
- (d) = **Net changes in income before taxes**
- (e) -(+) Net increase (decrease) in taxes
- (f) = **Net change in income after taxes**
- (g) +(-) Net increase (decrease) in tax depreciation charges
- (h) = **Incremental net cash flow for the period**

Basic format for determining terminal year incremental NCF

- (a) Net increase (decrease) in operating revenue
- (b) -(+) Any net increase (decrease) in operating expenses excluding depreciation
- (c) -(+) Net increase (decrease) in tax depreciation charges
- (d) = Net change in income before taxes
- (e) - (+) Net increase (decrease) in taxes
- (f) = Net change in income after taxes
- (g) +(-) Net increase (decrease) in tax depreciation charges
- (h) = Incremental cash flow for the terminal year before project winds up Consideration.

- (i) +(-) Final salvage value of new asset (disposal/reclamation costs) of new asset(s)
- (j) -(+) Taxes (tax saving) due to sale or disposal of new asset (s)

(K) + (-) Decreased (increased) level of net working capital

(l) = Terminal year incremental net cash flow

Mathematical definition of cash flow

Net cash flow may be defined as: -

After tax net cash flow = net income after tax + depreciation

= (Revenue - expenses including depreciation)(1-T) + depreciation

= Net operating income (1-T) + depreciation

Where, T = corporate tax rate applicable to the firm.

Another equivalent formulation of after tax net cash flow can be obtained by considering operating income that does not reflect non-cash expense.

After tax net cash flow = (operating income) (1-T) + depreciation

6.2.1.2 : CAPITAL BUDGETING TECHNIQUES

(d) PROJECT EVALUATION AND SELECTION

Several techniques are available for project evaluation and selection. Among the many capital budgeting techniques used the following are common: -

- i. Accounting rate of return (ARR)
- ii. The pay back period (PBP)
- iii. Net present value (NPV)
- iv. Internal rate of return
- v. Profitability index (PI)

The Accounting Rate of Return (ARR)

Defn: The ARR is the average rate of return found by dividing the average profit by the average investment

$ARR = \text{average profit} / \text{average investment}$

Acceptance criterion

If the ARR is greater than a minimum acceptable rate, the project is accepted, if not is rejected.

Merits

- Accounting data with which executives are familiar
- Easy to understand and calculate

Demerits

- Ignores the time value of money
- Does not use cash flows
- Gives more weight to future receipts
- No objective way to determine the minimum acceptable rate of return

The Pay Back Period method (PBP)

Defn: The period of time required for the cumulative expected cash flows from an investment project to equal the initial cash outflow.

The pay back period method is a simple additive method for assessing the worth of a project. The payback period of an investment project tells us the number of years required to recover the initial cash investment based on the project's expected cash flows.

Example.

The NICO Ltd is considering the introduction of a new fish-flaking facility in Mwanza, to launch the facility; it will need to spend \$90,000 for special equipment. The equipment has a useful life of four years. Shipping and installation expenditures equals \$10,000. NICO expects to generate net cash flows of \$34,432, \$39,530, \$39,359 and \$32,219 over the next 4 years

Required

Estimate the project's payback period

Solution

Year	Cash flows (\$)	Cumulative inflows (\$)
0	100,000	-
1	34,432	34,432
2	39,530	73,962
3	39,359	113,321
4	32,219	145,540

Steps

1. Accumulate the cash flows occurring after the initial outlay in “cumulative inflows” column
2. Look at the “cumulative inflows” column and not the last year (a whole figure) for which the cumulative total does not exceed the initial outlay. (In our example, that would be year 2)
3. Compute the fraction of the following year’s cash inflow needed to “payback” the initial cash outlay as follows: Take the initial outlay minus the cumulative total from step 2, and then divide this amount by the following year’s cash inflow. [For our example, we have $(100,000 - 73,962) / 39,359 = 0.66$]
4. To get the payback period in years, take the whole figure determined in step 2, and add to it the fraction of a year determined in step 3. (Thus, our payback period is 2 plus 0.66, or 2.66 years)

Acceptance criterion

If the pay back period calculated is less than some maximum acceptable pay back period, the proposal is accepted. If not it is rejected

Merits

- It does give a rough indication of the liquidity of a project
- It is easy to understand, apply and inexpensive to use
- It is used as a measure of project risk
- It considers cash flows

Demerits

- It ignores the time value of money
- Ignores cash flows accruing after the pay back period
- The maximum acceptable pay back period, which serves as the cutoff standard, is purely subjective choice.

The Internal rate of return (IRR)

Because of the various shortcomings in the payback method, it is generally felt that discounted cash flow methods provide a more objective basis for evaluating and selecting investment projects. These methods take account of both the magnitude and the timing of expected cash flows in each period of a project's life. Shareholders, for example, place a higher value on an investment project that promises cash returns over the next five years than on a project that promises identical cash flows for years 6 through 10. Consequently, the timing of expected cash flows is extremely important in investment decision. There are three major discounted cash flow methods, namely, the internal rate of return (IRR), the net present value (NPV) and the profitability index (PI).

Defn: The IRR is defined as the discount rate that equates the present value of the further net cash flows an investment project with the project's initial cash out flow. It is discount rate, which forces the NPV to equal zero.

$$ICO = CF_1 / (1 + IRR)^1 + CF_2 / (1 + IRR)^2 + \dots + CF_n / (1 + IRR)^n$$

Thus, IRR is the interest rate that discounts the stream of future net cash flows-CF through CF – to equal in present value the initial cash outflow (ICO) at time 0. For our example in payback method (NICO), the problem can be expressed as follows:

$$\$100,000 = \frac{\$34,432}{(1 + IRR)^1} + \frac{\$39,530}{(1 + IRR)^2} + \frac{\$39,359}{(1 + IRR)^3} + \frac{\$32,219}{(1 + IRR)^4}$$

Finding the Internal rate of return

The following method are used to find IRR

- Trial –and error procedure using present value tables
- Using computer programs and programmed calculators

Solving for the IRR, sometimes involves a trial-error procedure using present value tables. Fortunately, there are computer programs and programmed calculators for solving the internal rate of return.

$$PV = 1 / (1 + r)^t$$

Year	Net cash flows	PV at 15%	Present values
1	\$34,432	0.870	\$ 29,955.84

2	\$39,530	0.756	29,884.68
3	\$39,359	0.658	25,898.22
4	\$32,219	0.572	18,429.27
		Total	\$104,168.01

A 15% discount rate produces a resulting value for the project that is greater than the initial cash outlay of \$100,000. Therefore, we need to try a higher discount rate to further handicap the future cash flows and force their present value down to \$100,000. How about a 20% discount rate?

Year	Net cash flows	PV at 20%	Present values
1	\$34,432	0.833	\$ 28,681.86
2	\$39,530	0.694	27,433.82
3	\$39,359	0.579	22,788.86
4	\$32,219	0.482	15,529.56
		Total	\$94,434.10

This time the discount rate chosen was too large. The resulting present value is less than the hoped-for \$100,000 figure. The discount rate necessary to discount the cash-flow stream to \$100,000 must, therefore, fall somewhere between 15 and 20%

Present value at 15% > ICO > present value at 20%

\$104,168.01 > \$100,000 > \$94,434.10

To approximate the actual rate, we interpolate between 15 % and 20% as follows

\$104,168 .01 - \$94,434.10 = \$9,733.91

\$104,168.01 - \$100,000 = \$4,168.01

20% - 15% = 5% = 0.05

$$\frac{X}{0.05} = \frac{\$4,168.01}{\$9,733.91}$$
Therefore,
$$X = \frac{(0.05) \times (\$4,168.01)}{\$9,733.91} = 0.0214$$

And IRR = 0.15 + X = 0.15 + 0.0214 = 0.1714, or 17.14%.

Acceptance criterion

The acceptance criterion generally employed with the internal rate of return method is to compare the IRR to a required rate of return, known as the cutoff or hurdle rate. If the internal rate of return exceeds the required rate, the project is accepted, if not, the project is rejected.

Merits

- Considers all cash flows
- Recognize time value of money

Demerits

- Requires estimates of cash flows which is a sections task
- At times fails to indicate correct choice between mutually exclusive project
- At times yield multiple rates.

The Net Present value (NPV) method

Like the internal rate of return method, the net present value method is a discounted cash flow approach to capital budgeting. The net present value (NPV) of an investment proposal is the present value of the proposal's net cash flows less the proposal's initial cash out flow.

The NPV method discounts all cash flows to the present using a predetermined minimum acceptable rate of return as the discount rate.

NPV=the present value of an investment project's net cash flows minus the project's initial cash out flow.

$$NPV = CF^1 / (1+K) + CF_2 / (1+K)^2 + \dots \dots \dots CF_n / (1+K)^n - ICO$$

Or

$$= \sum \frac{CF_t}{(1+K)^t} - ICO$$

But if there is a salvage value for the project, then the NPV can be computed as below: -

$$NPV = CF^1 / (1+K) + CF_2 / (1+K)^2 + \dots \dots \dots CF_n / (1+K)^n + SV_n / (1+K)^n - ICO$$

Or

$$= \sum \frac{CF_t}{(1+K)^t} + \frac{SV_n}{(1+K)^n}$$

Where, k = the required rate of return

CF = Net cash flow

ICO = Initial cash out flow

SV = salvage value

Acceptance criterion

If an investment project's NPV is zero or more, the project is accepted, if not it is rejected. Another way to express the acceptance criterion is to say that the project will be accepted if the present value of cash inflows exceeds the present value of cash out flows.

Illustration.

Refer the example above (i.e. NICO)

If we assume a required rate of return of 12% after taxes, the present value is: -

$$\begin{aligned} \text{NPV} &= \frac{\$34,432}{(1 + \text{IRR})^1} + \frac{\$39,530}{(1 + \text{IRR})^2} + \frac{\$39,359}{(1 + \text{IRR})^3} + \frac{\$32,219}{(1 + \text{IRR})^4} - \$100,000 \\ &= \$30,748 + \$31,505 + \$28,024 + \$20,491 - \$100,000 \end{aligned}$$

$$\text{NPV} = \$10,768$$

Merits

- Consider all cash flows
- Recognize the time value of money
- Consistent with wealth maximization principle

Demerits

- Requires estimation of cash flows which is a tedious task
- Requires the computation of opportunity cost of capital which poses practical difficulties
- Sensitive to discount rates.

The profitability Index method (PI)

Defn: The PI is the ratio of present value of future net cash flows to the initial out flow. It is also known as the benefit-cost ratio.

$$PI = \frac{CF^1}{(1+K)} + \frac{CF_2}{(1+K)^2} + \dots + \frac{CF_n}{(1+k)^n}$$

For our example above,
 $PI = [\$30,748 + \$31,505 + \$28,024 + \$20,491] / \$100,000$
 $= 1.11$

Acceptance criterion

As long as the profitability index is 1 or greater, the investment proposal is accepted. For any given project, the net present value and the profitability index methods give the same accept-reject signals. A profitability index greater than 1.00 implies that a project's present value is greater than its initial cash outflow, which, in turn, implies that net present value, is greater than zero.

Merits

- Considers all cash flows
- Recognize the time value of money
- It is a relative measure of profitability (for the comparison)
- Generally consistent with the wealth maximization principle

Demerits

- Same as those of the IRR method (1 and 2)

Note

The payback period (PBP) and ARR methods are sometime referred to as the non-discounted cash flow capital budgeting techniques. The NPV, IRR and PI are referred as discounted cash flow methods.

(e) PROGRESS REVIEWS AND POST-COMPLETION AUDITS

The capital budgeting process should not end with the decision to accept a project. Continual monitoring of the project is the necessary next step to help ensure project success. Therefore, businesses (companies) should perform progress reviews followed by post-completion audits for all large projects, strategically important projects, regardless of size, especially during the implementation phase of a project, early warnings of potential cost overruns, revenue shortfalls,

invalid assumptions, and outright project failure. Information revealed through progress reviews may lead to revised forecasts, remedial actions to improve performance or project abandonment.

Post-completion audits allow management to determine how close the actual results of an implemented project have come to its original estimates. When they are used properly, progress reviews and post-completion audits can help identify forecasting weakness and any important factors that were omitted. With good feed back system, any lessons learned can be used to improve the quality of future capital budgeting decision making.

Monitoring of a project can also have important psychological effects on managers. For example, if managers know in advance that their capital investment decisions will be monitored; they will be more likely to make realistic forecasts and to see that original estimates are met.

The basic mechanism in capital budgeting (The capital budgeting process)

The basic processes of capital budgeting are: -

1. Identify initial investment
2. Estimate the cash flows
3. Determine discount factor
4. Apply decision criteria

6.2.2 : PROJECT APPRAISAL IN THE INTERNATIONAL CONTEXT

Domestic Capital Budgeting versus International Capital Budgeting

Project appraisal in the international context can also be referred as capital budgeting for multinational.

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. The process of analyzing foreign direct investments is more complicated than for purely domestic ones.

The relevant cash inflows for a foreign investment are those that can be “repatriated” (returned) to the home-country parent. If the expected return on investment is based on non-remittable cash flows that build up in a foreign subsidiary, the investment is unlikely to be attractive.

Measuring cash flows is more difficult as result of: -

- Different tax laws
- Fluctuating exchange rates
- The difficult of forecasting macroeconomic conditions in a foreign country
- Political risk
- Cultural differences and communications problems

Also, the process of measuring the appropriate cost of capital is complicated by the problem of measuring systematic risk for real investments in a global context

There are also a number of issues and problems, which need to be considered when analyzing foreign investments.

Foreign complexities:

Multinational capital budgeting encounters a number of variables and factors, that are unique for a foreign project and is considerably more complex than their domestic counterparts. The various factors are: -

- Parent cash flows are different from project cash flows
- All cash flows of the foreign projects must be converted into the currency of the parent
- Profits remitted to the parent are subject to two taxing jurisdiction i.e. the parent country and the host country
- Anticipate the differences in the rate of national inflation as they can result in changes in competitive position and thus in cash flows over a period of time
- The possibility of foreign exchange risk and its effect on the parent's cash flow
- If the host country provides some concessionary financing arrangements and / or other benefits, the profitability of the foreign project may go up
- Initial investment in the host country may benefit from a partial or total release of blocked funds
- The host country may impose restrictions on the distribution of cash flows generated from the foreign projects
- Political risk must be evaluated thoroughly as changes in political events can drastically reduce the availability of cash flows
- It is more difficult to estimate the terminal value in the multinational capital budgeting because
- Potential buyers in the host or parent company may have widely different views on the value of acquiring the project.

Problems and issues in the Foreign Investment analysis

The main added complications, which distinguish a foreign project from domestic project, could be summarized as follows: -

Foreign Exchange Risk

Cash flows from a foreign project are in foreign currency and therefore subject to exchange risk from the parent's point of view. Multinational firms investing abroad are exposed to foreign exchange risk i.e. risk that currency will depreciate or appreciate over a period of time. Understanding of foreign exchange risk is very important in the evaluation of cash flows generated by the project over its life cycle.

Remittance Restrictions

Where there are restrictions on the repatriation of income, substantial differences exist between projects cash flows and cash flows received by the parent firm. Only those cash flows that are remittable to the parent company are relevant from the firm's perspective.

International Taxation

Every country taxes income of foreign companies doing business in that country. The type of tax imposed varies. Some of these countries differentiate between income distributed to shareholders and undistributed income, with lower tax on distributed income. Less developed countries frequently have lower taxes and provide certain other tax incentives to encourage foreign investment.

Both in domestic and international capital budgeting, only after-tax cash flows are relevant for project evaluation. However, in international capital budgeting, the tax issue is complicated by the existence of two taxing jurisdictions, plus a number of other factors including of remittance to the parent firm, tax withholding provision in the host country. Owing to different tax laws and different treatments of foreign investment, the taxation of multinational firm is complex.

Political or country Risk

Assets located abroad are subject to the risk of expropriation or nationalization (without adequate compensation) by the host country government. Also, there are may be changes in applicable withholding taxes, restriction on remittances by the subsidiary to the parent, etc.

Method of International Capital Budgeting

In international capital budgeting two approaches are commonly applied:

1. Discounted cash flow analysis (DCF)
2. The Adjusted Present value Approach

1. The Discounted Cash Flow Analysis

DCF technique involves the use of the time value of money principle to project evaluation. The two most widely used criteria of the DCF technique are: -

- The Net Present Value (NPV) and
- The Internal Rate of Return (IRR)

The NPV is the most popular method.

2. The Adjusted Present Value Method (APV)

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 method uses different discount rates from different segments of the total cash flow depending upon the degree of certainty attached with each cash flow. In addition the APV format helps the analyst to test the viability of the foreign project before accounting for all the complexities.

The APV model is a value additive approach to capital budgeting. The cash flows are logically discounted at different rates, a function of their different risk. Operating cash flows are viewed as being more risky. They are therefore discounted at the cost of equity. The adjusted present value of a project is given by

$$APV = \frac{OCF_t}{(1+k^*)^t} + \frac{K_d D T}{(1+K_d)^t} - \text{Initial Cash Investment}$$

Or

$$APV = \sum \frac{OCF_t}{(1+K^*)^t} + \sum \frac{K_d D T_c}{(1+K_d)^t} - ICO$$

Where, OCF= The after tax operating cash flow in period

K*= The required rate of return in the absence of leverage (all equity financing)

D= Value of debt financing sustainable by the project

Kd= Cost of debt financing

Therefore, according to the CAPM each project has its own required return and can be evaluated without regard to the firm's other investments if project specific approach is not used.

Parent Vs Subsidiary Perspective of Capital Budgeting

Should the capital budgeting for multinational projects be conducted from the viewpoint of the subsidiary that would administer the project or the parent that would most likely finance much of the project?

The feasibility of the capital budgeting analysis can vary with the perspective, because the net after tax cash inflows to the subsidiary can differ substantially from those to the parent.

Such differences result from the above (foreign complexities) discussed factors.

Foreign project is analyzed from the view point of the parent i.e. a foreign project should be judged on NPV from the view point of funds that can be freely remitted to the parent. In this case, the cash flows to the parent are important for decision because it help the parent copy: -

- For dividends to the shareholders
- Reinvestment else where in the world
- Repayment of corporate debt.

Centralized capital budgeting Vs Decentralized capital budgeting

Decentralized capital budgeting technique

- Forecast the cash flows in foreign (local) currency
- Discount the cash flows at the discount rate appropriate for the foreign market, this gives NPV in terms of foreign currency
- Convert the NPV in foreign currency into domestic values at the spot exchange rate.

Centralized capital budgeting technique

- Forecast the cash flows in foreign currency
- Convert these cash flows into domestic currency, using the relevant forward exchange rates
- Discount the cash flows in domestic currency and the discount rate appropriate for domestic projects.

Ways of calculating cost of capital

(a) Using the capital assets pricing model (CAPM)

$$K_{eg} = r_f + \beta_{eg} (r_m - r_f)$$

Where, K_{eg} = Rate of return for geared firm

r_f = Risk free rate of interest

β_{eg} = the beta of the geared firm

r_m = rate of return on the market.

(b) Using the weighted average cost of capital

$$WACC_g = \frac{E}{D+E} k_{eg} + \frac{D}{D+E} k_d (1-t)$$

Where, $WACC_g$ = weighted average cost of capital of geared firm

E = equity of the firm

D = debt of the firm

K_{eg} = cost of equity of geared firm

K_d = cost of debt

T = effective tax rate

(c) Using the dividend model

$$P_o = \frac{D}{(K_{eg} - g)}$$

Where, P_o = ex-div. price of a share

D = current dividend paid

K_{eg} = cost of equity of a geared firm

G = growth rate of dividend

Therefore, $K_{eg} = D/P_o + g$

Illustrations

MUHAMMAD MUSTAFA

MBA FROM UOS

1. A UK firm's subsidiary in Delta Republic

Initial investment D\$ 480,000

Annual cash flow D\$ 350,000

Corporate tax: Delta Republic None

UK 25%

Required rate of return 18%

Exchange rate $Y_0 = \text{£}0.50/\text{D\$}$

$Y_1 = \text{£}0.52/\text{D\$}$

$Y_2 = \text{£}0.54/\text{D\$}$

Assume withholding tax is 10%

Required

Compute NPV in both subsidiary and parent perspectives

Solution

(i) Subsidiary perspective

	Y_0	Y_1	Y_2
Cash flow (D\$)	(480,000)	350,000	350,000
Discounting factor	1	0.8475	0.7182
Present value (D\$)	(480,000)	296,625	251,370

Therefore, $\text{NPV} = (296,625 + 251,370) - 480,000 = \text{D\$ } 67,995$

(i) Parent perspective

	Y ₀	Y ₁	Y ₂
Cash flow (D\$)	(480,000)	350,000	350,000
Exchange rate	0.50	0.52	0.54
Cash flows (£)	(240,000)	182,000	189,000
Discounting factor	1	0.8475	0.7182
Present value (£)	(240,000)	154,245	135,739.80

$$\text{NPV} = (£240,000) + £154,245 + £135,739.80 = £49,984.80$$

QUESTIONS

Q.1. Bethel plc is a UK company considering whether to establish a subsidiary in the USA. The subsidiary would cost a total of \$ 20m including \$4m for working capital.

A suitable existing factory and machinery have been located and production could commence quickly. A payment of \$19m would be required immediately, with the remainder required at the end of year one.

Production and sales are forecasted as 50,000 units in the first year and 100,000 units per year there after. The unit price, unit variable cost and total fixed costs in year one are expected to be \$100, \$40 and \$1 million respectively. After year one prices and costs are expected to rise at the same rate as the previous year's level of inflation in the USA, this is a forecast to be 5% per year for the next 5 years.

In addition, a fixed royalty of £ 5 per unit will be payable to the parent company, Payment to be made at the end of each year.

MUHAMMAD MUSTAFA

MBA FROM UOS

Bethel plc has a 4-year planning horizon and estimates that the realizable value of the fixed assets in 4 year's time will be \$20 million.

It is company's policy to remit the maximum funds possible to the parent company at the end of each year. Assume that there are no legal complications to prevent this.

Bethel currently exports to the USA yielding an after tax cash flow of \$100,000. No production will be exported to the UAS if the subsidiary is established. It is expected that new export markets of a similar worth in southern Europe could replace exports to USA. UK production is at full capacity and there are no plans for expansion in capacity.

Tax on the company's profits is at the arête of 50% in both countries, payable one year in arrears. A double taxation treaty exists between the UK and the USA and no taxation is expected to arise. No withholding tax is levied on royalties on payables from the USA to the UK.

Tax allowable depreciation is at 25% on a straight-line basis on all fixed assets.

Bethel believes that, the appropriate beta for this investment is 1.2, the after tax market rate of return is 12% and the risk free rate of interest is 7% after tax.

The current spot exchange rate is US\$ 1.300/£ and the pound is expected to fall in value by approximately 5% per year relative to the US\$.

Required:

Evaluate the proposed investment from the view point of Bethel plc. (State clearly the assumption you make)

QUESTION 2:

Meremeta Corporation currently has no existing business in German but is considering establishing a subsidiary there. The following information has been gathered to assess this project.

Initial investment capital required to start the project would be Euro 50 million to be used to buy plant and equipment. The plant is expected to have a useful life of 10 years and would be terminated at the end of year 3, when the subsidiary would be sold. Meremeta expects to receive Euro 35 million when it sells the subsidiary. This would be equal to the book value at the end of year 3. The exchange rate of the Euro is expected to be Tshs 0.56 at the end of year 3. How ever, it is estimated that the risk free interest rate in Tanzania is 12% and in German is 10%.

The price, demand and variable cost of the product in German are as follow:

Year	Price (Euros)	Demand (units)	Variable cost (Euros)
1	500	40,000	30
2	511	50,000	35
3	530	60,000	40

The fixed costs, such as overheads expenses, are estimated to be Euro 6 million per year.

All cash flows received by the subsidiary are to be sent to the parent company at the end of each year. The German government would impose an income tax of 30%. In addition, it would impose a withholding tax of 10% on earning remitted by the subsidiary. The Tanzania government would allow a tax credit on remitted earnings and would not impose any additional taxes. Meremeta requires 20% rate of return on this project.

Required

Should Meremeta accept the project or not? Justify your answer

Question 3.

Maisha Bora Company is a South Africa base manufacturer of kitchen furniture. The company's senior management has believed for several year's that there is little opportunity to increase sales in the domestic market and wish to set up a manufacturing subsidiary in Tanzania. Because of high transaction costs, Exporting from South Africa is not financially viable.

In Tanzania subsidiary would involve itself in the construction of a new factory in Dar es Salaam

Asset	Now Tshs '000'	Year 1 Tshs '000'
Land	23,000	-
Building	16,000	62,000
Machinery	-	64,000
Initial investment in working Capital	15,000	-

Production and sales in year two are estimated to be 2,000, kitchen furniture at an average price of Tshs 200,000 at current prices. Production and sales in each of year 3-5 is forecasted at 2,500 units. Total local variable costs in Tanzania in year two are expected to be Tshs 110,000 per unit at current prices. No tax allowable depreciation exists on fixed assets.

MUHAMMAD MUSTAFA

MBA FROM UOS

All prices and costs in Tanzania are expected to increase annually by the current rate of inflation. The after realizable value of the investment in five year's time is expected to be approximately Tshs 162 million at price levels the ruling. Inflation for each of the next six years is expected to be: -

South Africa 3%

Tanzania 5%

The cost of capital for the company is 10%. The spot exchange rate is Tsh50/SAR. Corporation tax in Tanzania is 30%, is South Africa 40%. Taxation is payable, and allowances are available, one year in arrears. The government of Tanzania is anxious to encourage foreign investment and thus allows overseas investors to repatriate annual cash dividend equal to that year's after tax accounting profit. Cash remitted to South Africa from the subsidiary is not taxable in South Africa.

Required

Evaluate whether Maisha Bora Company should establish the Tanzanian subsidiary.

Question 4

A USA based MNC is considering the establishment of a two year project in Japan with a US\$ 8 million initial investment. The company's cost of capital is 12%. The required rate of return on this project is 18%. The project with no salvage value after two years is expected to generate net cash flows of yen 12 million in year 1 and yen 30 million in year 2.

Assume no taxes and a stable exchange rate of US\$ 0.60 per Japanese yen.

Required

What is the net present value of the project in dollar terms?

QUESTION 5

HERI YETU Ltd, a Tanzanian company, has just secured a permit to construct a Kshs.900 million-laundry soap factory in Kenya through a new subsidiary Geisha soaps (K) Ltd. Construction will last twelve months from January to December 2008 with production scheduled to start January 2009. Heri Yetu Ltd will operate the plant for three years and sell it to a consortium of Kenyan businessmen at an agreed price of Kshs 500 million. During the three years of operations, earnings before depreciation and taxes are expected to be kshs 280 million, Kshs 350 million, and Kshs 320 million. Though all of the construction costs will be considered as capital expenditure by the Kenyan Government, only Kshs 600 million is allowable for tax purposes at 25% per annum. Geisha (K) Ltd will pay corporate tax on profits to Kenyan tax

authorities at a 30% but there will be no tax consideration on gain or loss on the sale of the factory. In addition, there are no restrictions or taxes imposed on funds transferred between Kenya and Tanzania. Heri Yetu considers 17% as the appropriate required return for this project. The exchange rate at the beginning of 2008 is expected to be TAS20/Kshs and the Tanzanian shilling is expected to depreciate at 4% per annum relative to Kenyan shilling. Assuming that cash flows, including the construction costs, occur at the end of each year and that cash flow are remitted to Tanzania every year.

Required

Determine the project's NPV and advice Heri Yetu accordingly

TOPIC 7: INTERNATIONAL PORTFOLIO INVESTMENT AND DIVERSIFICATION

7.1: REVIEW OF THE CAPITAL ASSET PRICING MODEL (DCAPM & ICAPM)

Capital asset pricing model is a model that describes the relationship between risk and expected return and that is used in the pricing of risky securities.

The general idea behind CAPM is that investors need to be compensated in two ways: time value of money and risk. The time value of money is represented by the risk-free (rf) rate in the formula and compensates the investors for placing money in any investment over a period of time. The other half of the formula represents risk and calculates the amount of compensation the investor needs for taking on additional risk. This is calculated by taking a risk measure (beta) that compares the returns of the asset to the market over a period of time and to the market premium ($R_m - r_f$).

The CAPM says that the expected return of a security or a portfolio equals the rate on a risk-free security plus a risk premium. If this expected return does not meet or beat the required return, then the investment should not be undertaken. The security market line plots the results of the CAPM for all different risks (betas).

The portfolio theory considers the relationship between the risk and reward of a portfolio, where risk was measured as the standard deviation of returns. CAPM recognized that total risk (as considered in portfolio theory) comprises two elements: **systematic risk** and **unsystematic risk**. An investor who already holds a well – diversified portfolio is able to diversify away any unsystematic risk, so he only looks to be rewarded for a share's systematic risk.

The relevant risk of a security is not its total risk but the impact it has on the risk of the portfolio to which it is added. CAPM simply allows us to split the total risk of a security into the proportion that may be diversified away, and the proportion that will remain after the diversification process.

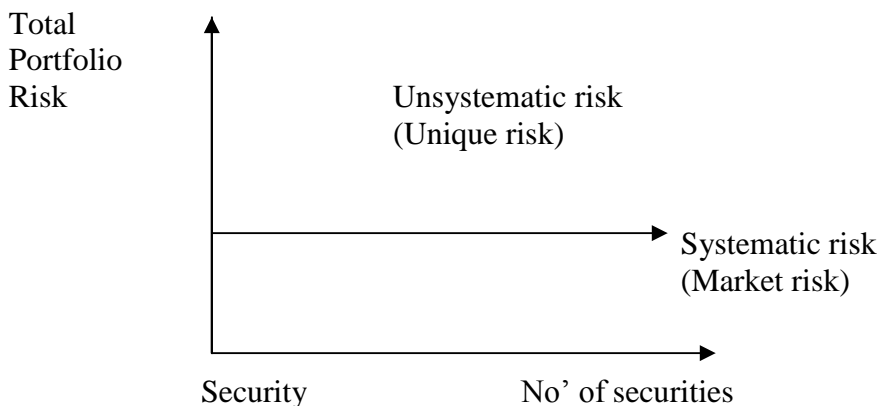
Systematic and unsystematic risk

A part of risk arises from the uncertainties which are unique to individual securities and which is diversifiable if large number of securities are combined to form well diversified portfolios. This part of the risk can be totally reduced through diversification and it is called **unsystematic** or unique risk. Examples of unsystematic risk are, a strike of workers, formidable competitor enters the market, a company loses a big contract in a bid, a government increases custom duty on materials used by a company.

Another part of the risk is the tendency individual securities to move together with changes in the market. This cannot be reduced through diversification and it is called **systematic risk** or market risk, examples are, changes in interest rate policy, corporate tax rate increase, increase in inflation rate.

Total risk, which in the case of an individual security is the variance (or standard deviation) of its return. It can be divided into two parts.

Total risk = systematic risk + unsystematic risk.



Initially substantial reductions in total risk are possible, however, as the portfolio becomes more and more diversified, risk reduction slows down and eventually stops.

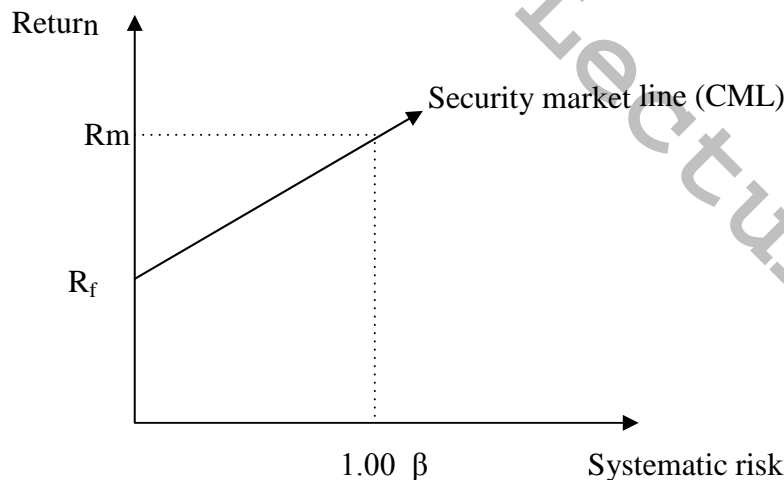
As non – systematic risk can be diversified always, investors need only concern themselves with (and will only earn returns for taking) systematic risk. The next problem is how to measure the systematic risk of investments,

The method adopted by CAPM to measure systematic risk is an index, normally referred to as beta (β), as with any index we need to establish some base points and then other observations will be calibrated around these points, the two base points are as follows:

The risk free security – this carries no risk and therefore no systematic risk. The risk free security hence has a beta of zero.

The market portfolio – This represents the ultimate in diversification and therefore contains only systematic risk.

Let us set beta to 1.00 for the market portfolio and this will represent the average systematic risk for the market. These two points may be represented in graph.



The security market line gives the relationship between systematic risk and return.

From the graph it can be seen that the higher the systematic risk the higher the required rate of return. The SML is often referred to in the form of an equation.

$$R_j = R_f + \beta_j (R_m - R_f)$$

Where, R_j = Required rate of return on investment j

R_f = risk – free rate of interest.

R_m = return on the market portfolio

β_j = index of systematic risk for security j

Beta (β) represents the relationship between the systematic risk of the individual investment and the overall market risk. It is therefore measured as follows:-

$$\beta_j \text{ security:} = \frac{\text{Systematic risk security.}}{\text{Market risk}}$$

Systematic risk is the proportion of the total risk that is directly related to market movement. This proportion is measured by the correlation coefficient between the security and the market (B, M). Thus beta can be calculated as.

$$\beta_j = \frac{\text{systematic risk security}}{\text{Market risk}} = \frac{\rho_{jm} \cdot \sigma_j}{\sigma_m}$$

σ = standard deviation

ρ_{jm} = correlation

According to CAPM, beta is the only relevant measure of a stock's risk. It measures a stock's relative volatility- that is, it shows how much the price of a particular stock jumps up and down compared with how much the stock market as a whole jumps up and down. If a share price moves exactly in line with the market, then the stock's beta is 1. A stock with a beta of 1.5 would rise by 15% if the market rose by 10%, and fall by 15% if the market fell by 10%.

Beta, compared with the equity risk premium, shows the amount of compensation equity investors need for taking on additional risk. If the stock's beta is 2.0, the risk-free rate is 3% and the market rate of return is 7%, the market's excess return is 4% (7% - 3%). Accordingly, the stock's excess return is 8% (2 X 4%, multiplying market return by the beta), and the stock's total required return is 11% (8% + 3%, (the stock's excess return plus the risk-free rate).

What this shows is that a riskier investment should earn a premium over the risk-free rate - the

amount over the risk-free rate is calculated by the equity market premium multiplied by its beta. In other words, it's possible, by knowing the individual parts of the CAPM, to gauge whether or not the current price of a stock is consistent with its likely return - that is, whether or not the investment is a bargain or too expensive

What CAPM Means for You

This model presents a very simple theory that delivers a simple result. The theory says that the only reason an investor should earn more, on average, by investing in one stock rather than another is that one stock is riskier

Assumptions of CAPM:

CAPM is based on a number of assumptions.

The most important one are as follows: -

- (i) Market efficiency (perfect capital market) - That is the capital market are efficient. This implies that shares prices reflect all available information.
- (ii) Risk aversion - investors, are risk averse,
- (iii) They evaluate a security's return and risk in terms of the expected return and variance or standard deviation respectively; they prefer the highest expected returns for a given level of risk.
- (iv) Homogeneous expectation all investors have the same expectations about the expected return and risk of securities.
- (v) Single time period – all investors decisions based on single time period.
- (vi) Risk free rate – all investors can lend or borrow at a risk free rate of interest.

Implications of CAPM:

CAPM has the following implications:

- (i) Investors will always combine a risk free asset with a market portfolio of risky asset.
- (ii) Investors will be compensated only for that risk which they cannot diversity, this is the market related (systematic) risk,
- (iii) Investors can expect returns from their investment according to the risk. This implies a linear relationship between the assets expected return and its beta.

LIMITATIONS OF CAPM

- a) It is based on unrealistic assumptions e.g. it's very difficult to find a risk – free

MUHAMMAD MUSTAFA

MBA FROM UOS

security. A short term, highly liquid government security is considered as a risk free

Mega Lecture

- security. It is unlikely that the government will default but inflation causes uncertainty about the real rate of return.
- b) It is difficult to test the validity of CAPM. Most of the assumptions of CAPM may not be very critical for its practical validity, what is needed is the empirical validity of CAPM.
 - c) Beta does not remain stable, overtime Beta is a measure of a security's future risk, but investors do not have future data to estimate beta. As well as expected return on the market.
 - d) It is strictly a one – period model and should be used with caution, if at all, in the appraisal of mult – period projects.

RELEVANCE OF CAPM

- (i) It provides a market-based relationship between risk and return, and assessment of security risk and return, and assessment of security risk and rates of return given that risk.
- (ii) It shows why only systematic risk is important in this relationship.
- (iii) It is one of the best methods of estimating a quoted company's cost of equity capital.
- (iv) It provides a basis for establishing risk adjusted discount rates for capital investment projects.

APPLICATION OF CAPM TO PROJECT APPRAISAL

The capital asset pricing model was originally developed to explain how the returns earned on shares are dependant on their risk characteristics, However, its greatest potential use in the financial management of a company is in the setting of minimum required returns (i.e. risk adjusted discount rates) for new capital investment projects.

The greatest advantage of using CAPM for project appraisal is that it clearly shows that the discount rate used should be related to the projects risk. It is not good enough to assume that the firm's present cost of capital can be used if the new project has different risk characteristics from the firm's existing operation after, the cost of capital is simply a return which investors require on their money given the company's present level of risk, and this will go up if risk increases.

Also, in making a distinction between systematic and un systematic risk, it shows how a highly speculative project such as mineral prospecting many have a lower than average required return simply because its risk is highly specific and associated with the luck of making a strike, rather than with the ups and downs of market (it has high overall risk but a low systematic risk).

Example

MUHAMMAD MUSTAFA

MBA FROM UOS

Mackin PLC is an all equity company with a cost of capital of 15% P./a. It wishes to invest in a project with estimated beta of 1.2.

If $r_f = 10\%$ and $r_m = 18\%$. What is the minimum required return of the project?

Soln

This firm's cost of capital is probably irrelevant because the new project almost certainly has risk characteristics different from the firm's existing operations.

$$\begin{aligned} \text{From CAPM } R_j &= r_f + \beta (r_m - r_f) \\ &= 10\% + 1.2 (18\% - 10\%) \\ &= \underline{\underline{19.6\%}} \end{aligned}$$

Example 2.

Kuleana P/c is an equity company with a beta of 0.8 It is appraising a one year project which requires an outlay now of £1,000 and will generate cash in one year with an expected value of £1,250. The project has a beta of 1.3 $r_f = 10\%$, $r_m = 18\%$

Required:

- (a) What is the firm's current cost of equity capital?
- (b) What is the minimum required return of the project?
- (c) Is the project worthwhile?

Soln

- (a) Cost of equity capital = $10\% + 0.8 (18\% - 10\%) = 16.4\%$
- (b) Project required return = $10\% + 1.3 (18\% - 10\%) = 20.4\%$
- (c) Expected project return = $\frac{(1250 - 1000)}{1000} \times 100\% = 25\%$

1000

Thus the project is worthwhile because its expected rate of return is higher than its minimum required return. This again assumes investors will not want only returns to compensate for the unsystematic risk on the new project, for reason already developed.

The 20.4% minimum required return is often referred to as the project's hurdle rate or alternatively its risk – adjusted discount rate.

For Live Classes, Recorded Lectures, Notes & Past Papers visit:
www.megalecture.com

MUHAMMAD MUSTAFA

MBA FROM UOS

INTERNATIONAL CAPITAL ASSET PRICING MODEL (ICAPM)

Mega Lecture

For Further Notes Contact no [youtube.com/c/MegaLecture/](https://www.youtube.com/c/MegaLecture/) Email Address kamal786412@gmail.com
03457963314 +92 336 7801123

The ICAPM is presented as

$$R_s = R_f + \beta_w (R_w - R_f)$$

Where, R_s = the expected return from a security

R_f = the risk free rate of return

R_w = expected return from the whole world portfolio

β_w = measure of world systematic risk i.e. how returns on security correlate with returns on the world market

IMPLICATIONS OF ICAPM

- (i) When setting a cost of capital, a company should assess the nature of its investors and their investment portfolio
- (ii) If markets are segmented, investments that are profitable for an international or foreign company might not be profitable for a domestic company, because the international company will have a lower cost of capital.

However, the validity of the international capital asset pricing model rest on the assumption that capital markets are fully integrated and investors are world investors. In practice, this is not necessarily the case. Countries and capital markets are not fully integrated, since there are costs to foreign investment and domestic investors often have better access to information than foreign investors.

Note: Integrated capital market exists if investors can invest in any country that does not impose restrictions on capital movement.

Segmented markets are associated with a closed economy or markets where switching investments from country to country is not easily achieved.

INTERNATIONAL PORTFOLIO RISK AND RETURN

INTRODUCTION

The expanded universe of securities available internationally suggests the possibility of achieving a better risk-return trade off than investing solely in single securities.

This relation follows from the basic rule of portfolio diversification which states that “the broader the diversification, the more stable the returns and the more diffuse the risks”. Prudent investors know that diversifying across industries leads to a lower level of risk for a given level of expected return.

Through international diversification i.e. by diversifying across nations whose economic cycles are not perfectly in phase, investors should be able to reduce still further the variability of their returns. That is to systematic risk; in the context of Tanzania economy may be unsystematic in the context of global economy.

The possibility of achieving a better-risk return trade off by investing internationally due to: -

- (i) National stock markets have wide differences in returns and risks
- (ii) The trade off between emerging and developed markets
- (iii) Returns from the different national equity markets have relatively low correlations with one another due to the following reasons: -
 - Different countries are often at different stages of the trade cycle at any one time
 - Monetary, fiscal and exchange rate policies differ internationally
 - Different countries have different endowments of natural resources and different industrial bases
 - Potentially risk political events are likely to be localized within particular national or regional boundaries

For most of us, our future is uncertain. And if you rely on only one source of income, you are likely to be exposed to negative shocks. Due to this fact, normally rational investors are risky averse, they rarely hold securities in isolation.

Portfolio is simply a combination of investments.

An investor will divide his/her fund in more than one investment, according to personal risk appetite.

Each investor will be able to invest in an efficient portfolio- that is one that gives the highest return for a given level of risk.

THE BENEFITS OF INTERNATIONAL DIVERSIFICATION

International investment provides more opportunities for benefits of diversification as compared to focusing on domestic investments alone. This is because what is considered a **systematic risk** in country A is not necessary systematic in country B

Therefore, it follows that further risk reduction is probable by investing internationally because the economy-wide factors (e.g. interest rates, inflation) that would influence the returns in country A, can not simultaneously affect all returns across the world.

How ever, this does not mean that international diversification can completely eliminate all the risks of holding a portfolio (some risk will remain)

The benefits of diversification depend on relatively low correlation among assets. It is often assumed that as their underlying economies became more closely integrated and across boarder financial flows accelerate, national capital markets will become highly correlated, significantly reducing the benefits of international diversification.

The extent to which risk is reduced by portfolio diversification, how ever depends on how highly the individual securities included in the portfolio are correlated. The less highly correlated the individual securities are, the less risky the portfolio becomes.

Consider a portfolio consisting of two stocks, if returns of these stocks are highly positively correlated so they move up and down together, the possibility of reduction by holding these stocks is minimal. On the other hand, if returns to the two stocks are not correlated with each other, risk reduction is very substantial, and as a result, the portfolio will be much less risk than either of the two stocks.

If securities returns show lower positive connection across countries than within a country, gains in terms of risk reduction will result from international diversification. As an investor increases the number of securities in a portfolio, the portfolio risk declines rapidly at first and then asymptotically approaches the systematic risk of the market.

There are basically two reasons for holding a portfolio: -

- To reduce risk
- Maximize returns.

The following are the advantages of international diversification

- It offers far more opportunity
- There is possibility of achieving a better risk-return trade off
- It reduces the variability of the returns
- It is a method for reducing MNC's risks
- It saves as a corporate motive for increasing international business

BARRIERS TO INTERNATIONAL DIVERSIFICATION

The benefits to international diversification will be limited, however, to the extent that there are barriers to invest overseas. Such barriers do exist. They include:

- Legal restrictions in some countries
- Foreign exchange regulations
- Double taxation of income
- Exchange rate risk
- Specific tax regulations
- High information's and transactions costs associated with investing in foreign countries

Ways of diversification

There are several ways in investors can diversify into foreign securities

1. Investors can always buy foreign securities in their home market. But it is very expensive because of the following reasons:
 - Steep brokerage commissions
 - Owners of foreign stocks also face the complications of foreign tax laws and the nuisance of converting dividend payments into home currency.
2. Buy shares in an internationally diversified mutual fund of which a growing number is available. There are four basic categories of mutual fund that invest abroad. These are Global funds, Regional funds, International funds and Single country funds.

Illustration.

Consider the following two investors with different returns due to changes in weather. Investor A sells ice cream and investor B sells Umbrellas.

State of nature	Sun	Rain	Average	Risk
Probability	0.5	0.5		
Contribution: ice cream	200	20	110	High
Contribution: umbrella	20	200	110	High

The two businesses are both profitable but very risky, because when investor A does well B does badly and vice versa.

If both investments are held, the resulting portfolio will generate a greater average (absolute) return than with either one alone. But risk will be reduced to a greater extent because the “ups” of A cancel the “downs” of B and vice versa.

Assume the two investors agree to run the two businesses together by pooling up their resources together so that each holds half the stock of the other.

Come rain come sun, the both make $(0.5 \times 200) + (0.5 \times 20) = 110$

Both investors now are happy because they are certain with the returns-risk free

State of nature	Sun	Rain	Average	Risk
Probability	0.5	0.5		
Contribution	110	110	110	Zero

The expected return

If possible returns are R_1, R_2, \dots, R_n with associated probabilities P_1, P_2, \dots, P_n , and then the expected return is represented by the following formula.

$$R = \sum R_i P_i$$

Where, R = expected return

N = number of events

P = Probability

MEASURING THE PORTFOLIO EXPECTED RETURN

The expected return of a portfolio is simply the weighted average of the expected returns of the securities comprising that portfolio. Weight is the proportion of fund invested in each of the two or more investments.

So if W_1 and W_2 are the proportions invested in securities 1 and 2 respectively, then the expected return on the portfolio comprising 1 and 2 is computed as: -

Formula for two security portfolio

$$ER_p = W_1 R_1 + W_2 R_2$$

Where, ER = expected return of portfolio

W_1 = proportion of the fund in security 1

R_1 = expected return from security 1

W_2 = Proportion of fund in security 2

R_2 = Expected return from security 2

Standard deviation

Is a measure of the extent to which outcomes vary around the expected return. It is mathematically presented as: -

$$\sigma = \sqrt{\sum (R_i - R_j)^2 P_i}$$

Where, σ = standard deviation

Measuring the risk of portfolio

The risk of a portfolio can be computed by using the following formula

$$\sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2 W_A W_B \sigma_A \sigma_B \rho_{AB}}$$

Or

$$= \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2 W_A W_B \text{Cov}_{A\&B}}$$

$$\rho_{AB} = \frac{\text{Covariance (A\&B)}}{\sigma_A \sigma_B}$$

Correlation

Correlation is the statistical measure of how strong the connection is between two variables. In portfolio theory, two variables are returns of two investments.

High positive correlation means that both investments tend to show increase/decrease in return at the same time

High negative correlation means that as returns on A investment increase, returns on B investment decrease.

No correlation means that the performance of one investment will be independent of how another performs. The degree of risk reduction possible by combining the investments depends on the correlation between them.

The coefficient of correlation is measured on a scale from -1 (perfect negative correlation) to +1 (perfect positive correlation)

Perfect negative correlation (but will not always) completely eliminate risk. The effects of diversification neither occur when security returns are not perfectly correlated.

Mathematically correlation is presented as

$$\rho_{AB} = \frac{\text{Covariance (A\&B)}}{\sigma_A \sigma_B}$$

As seen above that, one way of computing the correlation coefficient is to first compute the covariance.

Covariance is a measure of degree of co-movement between two variables, which is computed as: -

$$\text{Cov}_{A,B} = \sum P_i (R_A - \bar{R}_A)(R_B - \bar{R}_B)$$

Covariance does not quantify the strength of the relationship between the two investments.

If $\text{cov}(A, B) > 0$, then A and B move in the same direction (positive correlation)

If $\text{Cov}(A, B) < 0$, then A and B move in opposite direction (negative correlation)

The correlation coefficient is the ratio of the covariance to the product of two standard deviations.

MUHAMMAD MUSTAFA

MBA FROM UOS

Coefficient of variation (cv)

Mega Lecture

For a portfolio to be considered efficient it must offer either “a high return for a given level of risk or lower risk for given level of return”

In some situation it is not possible to determine the most efficient risk/return just by observing their relationship between risk and return. In this case the coefficient of variation should be computed. The formula for CV is given below:

$$\text{Coefficient of Variation} = \frac{\text{Portfolio risk } (\sigma_p)}{\text{Portfolio returns } (R_p)}$$

The lower the CV, the most efficient risk/return profile.

A general rule in portfolio theory:

Portfolio returns are weighted average of the expected returns on the individual investment but portfolio standard deviation is less than the weighted average risk of the individual investments, except for perfectly positively correlated investments.

Question 1

A portfolio manager is considering the benefits of increasing his diversification by investing overseas. He can purchase shares in individual country funds with the following characteristics

Country	Expected return %	Standard deviation %	Correlation with USA
United States	15	10	1
United Kingdom	12	9	0.33
Spain	5	4	0.06

Required

- What is the expected return and standard deviation of the return of portfolio with 25% invested in the United Kingdom and 75% in the United States?
- What is the expected return and standard deviation of the return of a portfolio with 25% invested in Spain and 75% in Unites states?

- (c) Calculate the expected return and standard deviation of returns of portfolio with 50% invested in United states and 50% in the United Kingdom

Question 2

KATEMO is a dealer in a crocodile product. Last year when he was going along Bibi Titi Road he saw a Daladala painted a jargon “ don’t put your eggs in one basket”. That statement led him to remember the issue of diversification. Following that statement he analyzed the following possible investment securities.

Security in country	Expected return in %	Standard deviation	Covariance
A	12	2.1	A & B 10
B	10	2.5	A & C 20
C	20	3.2	B & C 30

Mawazo plans to invest Tsh 10,000,000 in each of the two securities.

Required.

1. Which combination of investment should Mawazo select?
2. Assume the coefficient of correlation between

A&B	0.2
A& C	0.5
B&C	0.1

Using the same data above, which combination of securities gives the most efficient profile?

Questions 2

MALI NGUMU Limited, a company incorporated in Tanzania and having its Head office in DODOMA, is considering building up a medium term investment portfolio worth Tshs 25 million for future takeovers and acquisition. The management of the company is planning to invest Tshs. 2,000,000 in each of the companies that are quoted in the Dar es Salaam stock exchange.

Three possible investments have been identified, but it has been suggested that funds should be invested in Tanganyika Oxygen Ltd (TOL) and East Africa Breweries Ltd (EABL), which together have the most efficient risk/return profile.

You are also provided with the following data of possible investments.

Name of company	Expected return	Standard deviation of returns
TOL	15%	2.4
SIMBA	18%	6.2
EABL	17%	4.5
Co variances of return		
TOL & SIMBA	12.2	
TOL & EABL	8.1	
SIMBA & EABL	4.5	

Required

1. Estimate the correlation coefficient between each of the three possible portfolio combination and explain the implications of these coefficients for portfolio risk.
2. Which combination of portfolio should be selected

ESTIMATING THE RISK AND RETURNS ON INTERNATIONAL DIVERSIFICATION

Some times investors decide to spread they funds into proportions, that is part of the fund is invested domestically and part internationally. Hence, the returns and risk can be measured as follows: -

Expected return on domestic investment	R_d
Expected return on foreign investment	R_f
Proportion of funds invested in domestic	α
Proportion of funds invested in foreign	β

The expected return of the portfolio comprising the domestic and foreign returns is computed as

$$R_p = \alpha R_d + \beta R_f$$

The risk of international portfolio can be calculated as:

$$\sigma_p = \sqrt{\alpha^2 \sigma_d^2 + \beta^2 \sigma_f^2 + 2\alpha \beta \text{cov}(d, f)}$$

For Live Classes, Recorded Lectures, Notes & Past Papers visit:
www.megalecture.com

MUHAMMAD MUSTAFA

MBA FROM UOS

INVESTMENT IN FOREIGN CORPORATE SECURITIES

Mega Lecture

For Further Notes Contact no [youtube.com/c/MegaLecture/](https://www.youtube.com/c/MegaLecture/) Email Address kamal786412@gmail.com
03457963314 +92 336 7801123

Now it is necessary to determine how we are going to measure the return associated with investing in securities issued in different markets and denominated in variety of currencies.

The total return on investment can be decomposed into three separate elements: -

- (a) Dividend/interest income
- (b) Capital gains/losses
- (c) Currency gains/losses

The estimation of the benefits of international diversification follows the same basic rules of a two/three-asset portfolio

However, it is important to distinguish the following notations: -

Foreign investment

f

Domestic investment

d

Return on domestic investment R_d

Return on foreign investment R_f

THE RETURN ON BONDS

The one period total return of shillings (domestic) return on a foreign bond investment can be calculated as follows: -

Shillings (domestic) return = Foreign currency return + Currency gains/losses

$$1 + R_d = (1 + R_f) (1 + g)$$

The domestic currency rate of return required by investors can be approximated as:

$$R_d = R_f + g$$

This means that the Tshs rate of return is approximately equal to the sum of the foreign currency return plus the change in the Tshs value of the foreign currency

$$1 + R_d = \left\{ 1 + \frac{B(t) - B(o) + C}{B(o)} \right\} (1 + g)$$

Where,

$B(t)$ = foreign currency bond price at time t

$B(0)$ = foreign currency bond price at time 0

C = foreign currency coupon income

g = percentage change in shillings value of the foreign currency

Illustration

Suppose the initial bond price is FC 95, the coupon income is FC 8, the end of the period bond price is FC 97 and the foreign currency appreciates by 3% against the dollar during the period. What is the total dollar return?

THE RETURNS ON STOCKS

The one period on total domestic return on a foreign stock investment can be calculated as follows: -

$$1 + R_d = (1 + R_f)(1 + g)$$

$$1 + R_d = \left\{ 1 + \frac{P(t) - P(0) + \text{Div}}{P(0)} \right\} (1 + g)$$

Where,

$P(t)$ = foreign currency stock price at time t

$P(0)$ = foreign currency stock price at time 0

DIV = foreign currency dividend income

Illustration

Suppose the beginning stock price is FC 50, the dividend income is FC 1, the end of period stock price is FC 48 and the foreign currency depreciate by 5% against the dollar (domestic) during the period. What is the total dollar return?

Soln.

$$1 + R_{\$} = \left\{ 1 + \frac{48 - 50 + 1}{50} \right\} (1 - 0.05)$$
$$= -6.9\%$$

In this case the investor suffered both a capital loss on the FC principal and a currency loss on the investment's dollar value

MEASURING EXCHANGE RISK ON FOREIGN SECURITIES

Foreign currency fluctuations introduce exchange risk. The prospect of exchange risk is one of the reasons that investors have a preference for home country securities.

Specifically we can write the standard deviation of the domestic return as follows:

$$\sigma_{Tshs} = \sqrt{\sigma_f^2 + \sigma_e^2 + 2\sigma_f\sigma_e\rho_{fe}}$$

Where,

σ_f^2 - the variance of the foreign currency returns

σ_e^2 - The variance of the change in the exchange rate

ρ_{fe} - The correlation between the foreign currency returns and the exchange rate

σ_f & σ_e - The standard deviation of foreign currency returns and exchange rate respectively

Therefore this shows that the foreign exchange risk associated with a foreign security depends on both, the standard deviation of the foreign exchange rate change and the covariance between the exchange rate change and the foreign currency return on the security.

Illustration

Suppose that the standard deviation of the return on Matsushita, a Japanese firm, in terms of yen is 23% and the standard deviation of the rate of change in the dollar yen exchange rate is 17%. In addition, the estimated correlation between the yen return on Matsushita and the rate of change in the exchange rate is 0.31.

Required

Calculate the standard deviation of the dollar rate of return in investing on Matsushita

INTERNATIONAL PORTFOLIO MANAGEMENT

Portfolio management is the art and science of making decisions about investment mix and policy, matching investments to objectives, asset allocation for individuals and institutions, and balancing risk against Performance.

Portfolio management is all about strengths, weaknesses, opportunities and threats in the choice of debt vs. equity, domestic vs. international, growth vs. safety, and many other tradeoffs encountered in the attempt to maximize return at a given appetite for risk

TOPIC 8: GLOBAL FINANCING DECISIONS

8.1: INTERNATIONAL BANKING ISSUES

The growth and increasing integration of the world economy since the end of world war II has been parallel by expansion of global banking activities. Banks followed their customs overseas and lent to governments pressing over promising nation economies. International banking has grown notably in both complexity and risk over the past two decades. Until recently, international banking was confined largely to providing foreign exchange and to financing specific export and import transactions through letters of credit and acceptances. This limitation is no longer the case. The expansion of international trade and the effective emergence of the multinational corporations (MNC) sharply increased the demand for international financial services. The volume of international banking transaction has increased enormously in recent decades mainly centre on New York, London and Tokyo. The activity can be summarized as:-

- i. The growth of international trade and overseas investment increasing the demand for international funds.
- ii. The abolition of exchange controls encouraging the globalization of international financial markets whereby national financial markets becomes integrated into single international market.
- iii. Deregulations of capital markets permitting securitization of debt by which companies issue internationally traded instruments such as Eurobonds and euro commercial paper.
- iv. The development of multinational companies, operating in a range of countries.

Other reasons for international Banking

- (a) **Low marginal costs**-Managerial and marketing knowledge developed at home can be used abroad with low marginal costs.
- (b) **Knowledge Advantage**-The foreign bank subsidiary can draw on the parent bank's knowledge of personal contacts and credit investigations for use in that foreign market.
- (c) **Home Nation Information Services**-Local firms in a foreign market may be able to obtain more complete information on trade and financial markets in the multinational bank's home nation than is obtainable from foreign domestic banks
- (d) **Prestige**-Very large multinational banks have high perceived prestige, which can be attractive to new clients.
- (e) **Regulatory Advantage**-Multinational banks are often not subject to the same regulations as domestic banks.
- (f) **Wholesale Defensive Strategy**-Banks follow their multinational customers abroad to avoid losing their business at home and abroad.
- (g) **Retail Defensive Strategy**-Multinational banks also compete for retail services such as travelers' checks, tourist and foreign business market.
- (h) **Transactions Costs**-Multinational banks may be able to circumvent government currency controls.
- (i) **Growth**-Foreign markets may offer opportunities to growth not found domestically
- (j) **Risk Reduction**-Greater stability of earnings due to diversification.

The primary function of banks is to act as financial intermediaries, It's at is to provide a link between savers and borrowers. In international banking the same function is fulfilled but access national boundaries. In addition international banks provide a range of banking services for their customers engaged in international business activity.

International Banks do everything domestic banks do and:

- Arrange trade financing.
- Arrange foreign exchange.
- Offer hedging services for foreign currency receivables and payables through forward and option contracts.
- Offer investment banking services (where allowed).

Organizational forms for international banking

Decisions by banks as to how to approach foreign markets are influenced by number of variables, such as overall financial resources, level of experience with the markets, knowledge of the markets, volume of international business and the strategic plans of the bank as well as the banking structure of the foreign countries in which business is done. Possible entry strategies include branding, local bank acquisition (e.g. Acquisition of National Bank of commercial-NBC

by ABSA and indirectly by Barclays bank-a UK based international bank) and representative offices.

However, until the volume of business in another country is substantial, most banks will choose to rely on correspondent banking relationship to handle their needs in that country.

Hence there several types/forms of international banking offices, they include:

- Correspondent Bank
- Representative Offices
- Foreign Branches
- Subsidiary and Affiliate Banks
- Edge Act Banks
- Offshore Banking centers
- International Banking Facilities

Correspondent banking:

A correspondent bank is a bank located elsewhere that provides a service for another bank. Foreign correspondents can also provide other services such as foreign exchange conversions and letters of credit

A correspondent banking relationship exists when two banks maintain deposits with each other. Correspondent banking allows a bank's MNC client to conduct business worldwide through his local bank or its correspondents.

Advantage: - The major advantage of taking the correspondent route is that the cost of market entry is required.

Disadvantage: - One problem with relying on correspondent banks to provide all necessary services is that correspondents may assign low priority to the needs of the international bank's customers. In addition, due to legal restrictions on traditional banking policies, certain types of credits may be difficult to provide credits on a more regular and extensive basis.

Representative offices:

Representative offices are small offices opened up to provide advisory services to banks and customers and to expedite the services of the correspondent banks. They also serve as foreign loan production offices able to negotiate various business transactions. They also provide financial contracts with local institutions, commercial contracts for the bank's domestic customers and assistance to customers in obtaining government approval or understanding government regulations.

A *representative office* is a small service facility staffed by parent bank personnel that is designed to assist MNC clients of the parent bank in dealings with the bank's correspondents.

Representative offices also assist with information about local business customs, and credit evaluation of the MNC's local customers.

Advantages

As with exporting, representative offices provide a low-cost means of scouting out the local market. They can deliver certain services more efficiently than can a branch, especially if the required volume is small. They can help the bank attract additional business or loss of current business.

Disadvantage

They are not capital intensive compared to branches or local acquisitions.

Moreover, it is more difficult to attract qualified personnel to work in a representative office overseas than in a foreign branch.

Foreign Branches

The principal service offered by foreign branches, as with commercial banking anywhere, is the extension of credit, primarily in form of lending money. These branches also serve as deposit-taking institution.

Despite government regulation that has held down bank branching in foreign markets, the phenomenal growth of international banking over recent years has paralleled by explosive expansion in overseas branching.

The main reason for this massive overseas branching are:-The rationale of "follow the customer", access this branches provide to overseas money markets, foreign branch net work allows the parent to offer its customers both domestic and foreign direct and integrated service, foreign branches also allow a bank to better manage its customer relationship.

Disadvantages. The cost of establishing a branch can be quite high. Developing and training management to staff these branches is also difficult and expensive. On the plus side, having foreign branches offers the chance for junior officers to gain valuable overseas experiences.

Off shore Banking Centers

An *offshore banking center* is a country whose banking system is organized to permit external accounts beyond the normal scope of local economic activity

The host country usually grants complete freedom from host-country governmental banking regulations

The IMF recognizes the following as major offshore banking centers

- The Bahamas
- Bahrain
- The Cayman Islands
- Hong Kong
- The Netherlands Antilles
- Panama
- Singapore

Acquisition:

The alternative to expanding by opening new branches is to grow through acquisitions. Most foreign banks trying to penetrate the domestic market follow this approach.

Advantage: Acquiring a local has two main advantages. First, buying an existing retail bank will afford immediate access to the local deposit market, eliminating the problem of funding local loans.

Secondly, the existing management will have an established network for local contacts and clients that would be difficult (if not impossible) to duplicate.

Global competition in International Banking

The 1990s promises to be an era of intensified global competition in international banking. Already, big banks (e.g. England's Barclays, Citi corp., Swiss Bank corporation etc) are battling each other on many fronts: Lending, underwriting, leasing, financial advice and risk management services, currency and securities trading, Insurance, money management and consumer banking. Some experts predict that of some 40 to 50 banks now aspiring to be global banking powerhouses. They must also be able to cross- border flow of capital and be flexible enough to shift resources quickly to fast- growing areas and high- return business. At the same time, they must cope with deregulation and the industries over capacity- too many banks chasing to few customers.

The major competitors include European, Japanese, and American banks. Each has important competitive strengths weakness.

8.2 INTERNATIONAL MONEY MARKET

8.2.1 : Eurocurrency Market

The money market in which Eurocurrency, currency held in banks outside of the country where it is legal tender, is borrowed and lent by banks in Europe.

The Eurocurrency market allows for more convenient borrowing, which improves the international flow of capital for trade between countries and companies.

Notes

For example, a Japanese company borrowing U.S. dollars from a bank in France is using the Eurocurrency market

Eurocurrency

Currency deposited by national governments or corporations in banks outside their home market. This applies to any currency and to banks in any country. For example, South Korean deposit at a bank in South Africa is considered **Eurocurrency**.

It can also be defined as a time deposit in an international bank located in a country different than the country that issued the currency.

- For example, Eurodollars are U.S. dollar-denominated time deposits in banks located abroad.
- Euroyen are yen-denominated time deposits in banks located outside of Japan.
- The foreign bank doesn't have to be located in Europe

Most Eurocurrency transactions are interbank transactions in the amount of \$1,000,000 and up

Common reference rates include

- LIBOR the London Interbank Offered Rate
- PIBOR the Paris Interbank Offered Rate
- SIBOR the Singapore Interbank Offered Rate

A new reference rate for the new euro currency

EURIBOR -the rate at which interbank time deposits are offered by one prime bank to another.

Also known as "Euro money".

Having "Euro" doesn't mean that the transaction has to involve European countries. However, in practice, European countries are often involved

Funds deposited in a bank when those funds are denominated in a currency differing from the bank's own domestic currency. Eurocurrency applies to any currency and to banks in any country. Thus, if a Japanese company deposits yen in a Canadian bank, the yen will be considered Eurocurrency.

8.2. 2: Eurocredits

- Eurocredits are short- to medium-term loans of Eurocurrency.
- The loans are denominated in currencies other than the home currency of the Eurobank.
- Often the loans are too large for one bank to underwrite; a number of banks form a syndicate to share the risk of the loan.
- Eurocredits feature an adjustable rate. On Eurocredits originating in London the base rate is LIBOR.

8.2.3 : Forward Rate Agreements

- An interbank contract that involves two parties, a buyer and a seller.
- The buyer agrees to pay the seller the increased interest cost on a notational amount if interest rates fall below an agreed rate.
- The seller agrees to pay the buyer the increased interest cost if interest rates increase above the agreed rate.

Forward Rate Agreements: Uses

- Forward Rate Agreements can be used to:
- Hedge assets that a bank currently owns against interest rate risk.
- Speculate on the future course of interest rates.

8.2.4 : Euronotes

- Euronotes are short-term notes underwritten by a group of international investment banks or international commercial banks.
- They are sold at a discount from face value and pay back the full face value at maturity.
- Maturity is typically three to six months

8.2.5 : Euro-Medium-Term Notes

- Typically fixed rate notes issued by a corporation.
- Maturities range from less than a year to about ten years.
- Euro-MTNs is partially sold on a continuous basis –this allows the borrower to raise funds as they are needed.

8.2.6 : Euro commercial Paper

- Unsecured short-term promissory notes issued by corporations and banks.
- Placed directly with the public through a dealer.
- Maturities typically range from one month to six months.
- Eurocommercial paper, while typically U.S. dollar denominated, is often of lower quality than U.S. commercial paper—as a result yields are higher

8.3: THE INTERNATIONAL CAPITAL MARKET

What are Capital Markets?

Capital markets are markets where people, companies, and governments with more funds than they need (because they save some of their income) transfer those funds to people, companies, or governments who have a shortage of funds (because they spend more than their income). Stock and bond markets are two major capital markets. Capital markets promote economic efficiency by channeling money from those who do not have an immediate productive use for it to those who do.

Capital Markets Efficiently Direct Capital to Productive Uses.

Capital markets carry out the desirable economic function of directing capital to productive uses. The savers (governments, businesses, and people who save some portion of their income) invest their money in capital markets like stocks and bonds. The borrowers (governments, businesses, and people who spend more than their income) borrow the savers' investments that have been entrusted to the capital markets.

When savers make investments, they convert cash or savings (risk-free assets) into risky assets with the hopes of receiving enhanced benefits in the future. Since all investments are risky, the only reason a saver would put cash at risk is if returns on the investment are greater than returns on holding risk-free assets. Buying stocks and bonds and investing in real estate are common examples. The savers hope that the stock, bond, or real estate will "appreciate," or grow in value.

For example, suppose Gwakisa and Anna make \$50,000 in one year, but they only spend \$40,000 that year. They can invest the \$10,000 - their savings - in a mutual fund (pools of money managed by an investment company) investing in stocks and bonds all over the world. Gwakisa and Anna know that making such an investment is riskier than keeping the \$10,000 at home or in a savings account. But they hope that over the long-term the investment will yield greater returns than cash holdings or interest on a savings account. The borrowers in this

example are the companies that issued the stocks or bonds that are part of the mutual fund portfolio. Because the companies have spending needs that exceed their income, they finance their spending needs by issuing securities in the capital markets.

Finance can be Direct or Indirect

The example we just used illustrates a form of "direct" finance. In other words, the companies borrowed directly by issuing securities to investors in the capital markets. By contrast, indirect finance involves a financial intermediary between the borrower and the saver. For example, if Gwakisa and Anna put their money in a savings account at a bank, and then the bank lends the money to a company (or another person), the bank is an intermediary. Financial intermediaries are very important in the capital marketplace. Banks lend money to many people, and in so doing create economies of scale. That is, by lending out funds many times each day, costs per transaction decrease.

Capital Markets are Important because they Promote Efficiency and Productive Investments.

Capital markets promote economic efficiency. In our example, Gwakisa and Anna want to invest their \$10,000 productively. Any number of companies might have great business ideas but no funds to carry them out. By shifting the funds from Gwakisa and Anna to the companies through the capital markets, the funds are employed to their maximum extent. If there were no capital markets, Gwakisa and Anna might have kept their \$10,000 in cash or in a low-yielding savings account. The companies might have put off or canceled their business plans.

Many Types of Securities are Sold in Primary and Secondary Capital Markets.

The primary market is where new securities (stocks and bonds are the most common) are issued. The corporation or government agency that needs funds (the borrower) issues securities to purchasers in the primary market. Big investment banks assist in this issuing process. The banks underwrite the securities. That is, they guarantee a minimum price for a business's securities and sell them to the public. Since the primary market is limited to issuing new securities only, it is of lesser importance than the secondary market.

The vast majority of capital transactions, like the transaction in our example, take place in the secondary market. The secondary market includes stock exchanges (like the Dar Es Salaam Stock Exchange, New York Stock Exchange and the Tokyo Nikkei), bond markets, and futures and options markets, among others. All of these secondary markets deal in the trade of securities.

The term "securities" encompasses a broad range of investment instruments. You're probably most familiar with stocks and bonds. Investors have essentially two broad categories of securities available to them: equity securities (which represent ownership of a part of a company) and debt securities (which represent a loan from the investor to a company or government entity).

Savers who purchase debt instruments are creditors. Creditors, or debt holders, receive future income or assets in return for their investment. The most common example of a debt instrument is a bond. When investors buy bonds, they are lending the issuers of the bonds their money. In return, they will receive interest payments (usually at a fixed rate) for the life of the bond and receive the principal when the bond expires. National governments, local governments, global, national, and local companies, and many other types of institutions sell bonds.

Stock is the type of equity security with which most people are familiar. When investors (savers) buy stock, they become owners of a "share" of a company's assets and earnings. If a company is successful, the price that investors are willing to pay for its stock will often rise and shareholders who bought stock at a lower price then stand to make a profit. If a company does not do well, however, its stock may decrease in value and shareholders can lose money. Stock prices are also subject to both general economic and industry-specific market factors. In our example, if Gwakisa and Anna put their money in stocks, they are buying equity in the company that issued the stock. Conversely, the company can issue stock to obtain extra funds. It must then share its cash flows with the stock purchasers, known as stockholders.

Internationalization of Capital Markets in the Late 1990s

One of the most important developments since the 1970s has been the internationalization, and now globalization, of capital markets. Let's look at some of the basic elements of the international capital markets.

The International Capital Market of the Late 1990s was Composed of a Number of Closely Integrated Markets with an International Dimension.

Basically, the international capital market includes any transaction with an international dimension. It is not really a single market but a number of closely integrated markets that include some type of international component. The foreign exchange market was a very important part of the international capital market during the late 1990s. Internationally traded stocks and bonds have also been part of the international capital market. Since the late 1990s, sophisticated communications systems have allowed people all over the world to conduct business from wherever they are. The major world financial centers include Hong Kong, Singapore, Tokyo, London, New York, and Paris, among others.

It's not hard to find examples of securities that trade in the international capital markets. Foreign bonds are a typical example of an international security. A bond sold by a Tanzanian company in Kenya denominated in Kenyan shillings is a foreign bond. Eurobonds are another example. A Eurobond is a bond denominated in a currency other than that of the country in which it is sold. A bond denominated in Japanese yen that is sold in France is an example. In the late 1990s, the Eurobond became the primary bond of choice in the international marketplace. In 1995, over 80% of new issues in the international bond market were Eurobonds. The primary reason for their popularity was that because they could be repaid in any of several predetermined currencies, the issuing company could choose the currency it preferred.

Maybe you have heard of American Depository Receipts (ADRs) or Global Depository Receipts

MUHAMMAD MUSTAFA

MBA FROM UOS

(GDRs). In the late 1990s, these were used extensively in the privatization of public enterprises

Mega Lecture

in developing and transitioning (i.e. socialism to capitalism) countries. ADRs and GDRs are certificates issued by a depository bank, representing shares of stock of a foreign corporation held by the bank.

Of course, the foreign exchange market, where international currencies are traded, was a tremendously large and important part of the international capital market in the late 1990s. During this time, it was enormous, with market turn-over well above \$1 trillion daily. The average daily turnover in traditional foreign exchange markets rose to \$1.9 trillion in April 2004. Commercial banks use the foreign exchange market to meet the needs of their corporate customers, multinational corporations use the market to hedge against risks, and central banks enter into the market to manage the value of currencies.

8.3.1 : INTERNATIONAL BOND FINANCING

8.3.1.1. FOREIGN BONDS AND EURO BONDS

Foreign bond

A foreign bond is a bond issued in a domestic market for a foreign borrower. Foreign bonds tend to be more regulated than Eurobonds and are usually issued by a domestic group of banks

A debt security issued by a borrower from outside the country in whose currency the bond is denominated and in which the bond is sold. A bond denominated in U.S. dollars that is issued in the United States by the government of Canada is a foreign bond. A foreign bond allows an investor a measure of international diversification without subjection to the risk of changes in relative currency values

Three characteristics of foreign bonds

A foreign bond has three distinct characteristics:

- The bond is issued by a foreign entity (such as a government, [municipality](#) or [corporation](#))
- The bond is traded on a foreign financial market
- The bond is denominated in a foreign currency

Foreign bonds are regulated by the domestic market authorities and are usually given nicknames that refer to the domestic market in which they are being offered.

Since investors in foreign bonds are usually the residents of the domestic country, investors find them attractive because they can add foreign content to their portfolios without the added exchange rate exposure.

Types of foreign bonds include bulldog bonds, Matilda bonds, and samurai bonds

Foreign bonds represent an unenforceable claim

The primary risk of a foreign bond is that it is an unenforceable claim. An investor that owns the bonds of a company in his or her home country has specific legal recourse in the event of default. Foreign bonds, however, offer no such protection. An extremist political movement (e.g., Iran in the 1970's) could come to power and seize or deny all foreign assets and claims. A country may become engaged in a military conflict and prohibit its currency from leaving its borders. After World War II, for example, investors holding bonds in Great Britain were paid interest in pounds yet were unable to convert those pounds to dollars; the money could only be reinvested in pound-denominated investments or spent within the borders of Britain or her colonies.

Eurobond

A type of foreign bond issued and traded in countries other than the one in which the bond is denominated. A dollar-denominated bond sold in Europe by a U.S. firm is a Eurobond

A bond that is denominated in a different currency than the one of the country in which the bond is issued.

A Eurobond is usually categorized by the currency in which it is denominated, and is usually issued by an international syndicate. An example of a Eurobond is a Eurodollar bond, which is denominated in U.S. dollars and issued in Japan by an Australian company. Note that the Australian company can issue the Eurodollar bond in any country other than the United States.

Eurobonds are attractive methods of financing as they give issuers the flexibility to choose the country in which to offer their bond according to the country's regulatory constraints. In addition, they may denominate their Eurobond in their preferred currency. Eurobonds are attractive to investors as they have small par values and high liquidity.

Is it risky to invest in foreign securities?

Investing in foreign securities can actually reduce your overall portfolio risk and at the same time modestly increase the potential for returns. The U.S. stock market still remains the largest in the world; however, foreign markets now account for approximately 50% of the global stock market capitalization. Consequently, it is becoming more important to diversify portfolios globally, taking advantage of growth rates in different regions and countries. Proper international diversification can help balance out your returns by reducing or avoiding losses when the U.S. markets are under performing

The Principal Actors in the International Capital Markets are Banks, Non-Bank Financial Institutions, Corporations, and Government Agencies.

Commercial banks powered their way to a place of considerable influence in international markets during the late 1990s. The primary reason for this was that they often pursued international activities that they would not have been able to undertake in their home countries. The lack of international regulation fueled bank growth over the decades leading up to the 1990s.

Commercial banks undertook a broad array of financial activities during the late 1990s. They granted loans to corporations and governments, were active in the bond market, and held deposits with maturities of varying lengths. Special asset transactions, like underwriting were undertaken by commercial banks. By underwriting, the bank guaranteed a company issuing stocks or bonds that it would find buyers for the securities at a minimum price.

Non-bank financial institutions became another fast-rising force in international markets during the late 1990s. Insurance companies, pension and trust funds, and mutual funds from many countries began to diversify into international markets in the 1990s. Together, portfolio enhancement and a widespread increase in fund contributors have accounted for the strength these funds had in the international marketplace.

Corporations often use foreign funds to finance investments. Corporations may sell stock, issue bonds, or obtain loans from commercial banks. The trend in the late 1990s was for corporations to issue securities that attracted investors from all over the world. The Eurobond, which we described above, was an example of this. A Eurobond is a corporate bond not denominated in a single currency, but gives the lender the right to demand repayment from a preset spectrum of currencies. For example, a bond may allow its holder the right to be repaid in yen, euros or pounds. When the holding period is over, the holder chooses the most preferable currency at that time. This partially protects buyers from exchange rate fluctuations.

Government agencies, including central banks, were also major players in the international marketplace during the late 1990s. Central banks and other government agencies borrowed funds from abroad. Governments of developing countries borrowed from commercial banks, and state-run enterprises also obtained loans from foreign commercial banks.

Changes in the International Marketplace Resulted in a New Era of Global Capital Markets During the Late 1990s, which were Critical to Development.

Many observers say we entered an era of global capital markets in the 1990s. The process was attributable to the existence of offshore markets, which came into existence decades prior because corporations and investors wanted to escape domestic regulation. The existence of offshore markets in turn forced countries to liberalize their domestic markets (for competitive reasons). This dynamic created greater internationalization of the capital markets. Up until the 1990s, capital markets in the United States were larger and more developed than markets in the rest of the world. During the 1980s and 1990s, however, the relative strength of the U.S. market

decreased considerably as the world markets began to grow at phenomenal rates. Three primary reasons account for this phenomenon.

First, citizens around the world (and especially the Japanese) began to increase their personal savings.

Second, many governments further deregulated their capital markets since 1980. This allowed domestic companies more opportunities abroad, and foreign companies had the opportunity to invest in the deregulated countries.

Finally, technological advances made it easier to access global markets. Information could be retrieved quicker, easier, and cheaper than ever before. This allowed investors in one country to obtain more detailed information about investments in other countries, and obtain it quite efficiently. So, in the late 1990s we witnessed the globalization of markets - i.e., the increased integration of domestic markets into a global economy. This differed from the process of internationalization, which connected less integrated domestic markets of the past with offshore markets.

The global capital markets became critical to development in an open economy. Developing countries, like all countries, must encourage productive investments to promote economic growth. Domestic savings could be used to make productive investments. Typically, developing countries have suffered from low domestic savings rates (although this is not true of the African economies of the late 1990s). Thanks to global capital, however, developing countries added to domestic savings by borrowing savings from abroad.

If the foreign savings are invested wisely, the borrowing country will grow economically. Thus, foreign savings, which many people simply call foreign investment, can benefit developing countries.

8.3.2 : THE INTERNATIONAL EQUITY FINANCING

OUTLINES

- Market Structure, Trading Practices, and Costs
- International Equity Market Benchmarks
- World Equity Market Benchmark Shares
- Trading in International Equities
- Factors Affecting International Equity Returns

Market Structure, Trading Practices

Primary Markets- Shares offered for sale directly from the issuing company.

Secondary Markets- Provide market participants with marketability and share valuation

- **Market Order**-An order to your broker to buy or sell share immediately at the market price.
- **Limit Order**-An order to your broker to buy or sell at the at a price you want, when and if he can.
- If immediate execution is more important than the price, use a market order.

- **Dealer Market**
 - The stock is sold by dealers, who stand ready to buy and sell the security for their own account.
 - In the U.S., the OTC market is a dealer market.
- **Auction Market**
 - Organized exchanges have specialists who match buy and sell orders. Buy and sell orders may get matched without the specialist buying and selling as a dealer.
- **Automated Exchanges**
 - Computers match buy and sell orders

International Equity Market Benchmarks

- North America
- Europe
- Asia/Pacific Rim

North American Equity Market Benchmarks

NAME	SYMBOL
Dow Jones Industrial Average	DJIA
NASDAX Combined Composite	CCMP
S & P 500	SPX
TSE 300	TS300
Mexico BOLSA Index	MEXBOL

European Equity Market Benchmarks

NAME	SYMBOL
FT-SE 100	UK X
CAC 40	CAC
FRANKFURT DAXINDEX	DAX
IBEX INDEX	IBEX
MILAN MIB30	MIB 30
BEL20 INDEX	BEL 20

World Equity Benchmark Shares

- World Equity Benchmark Shares (WEBS)
 - Country-specific baskets of stocks designed to replicate the country indexes of 14 countries.

- WEBS are subject to U.S. SEC and IRS diversification requirements.
- Low cost, convenient way for investors to hold diversified investments in several different countries.

Trading in International Equities

- Magnitude of International Equity Trading
- Cross-Listing of Shares
- Yankee Stock Offerings
- The European Stock Market
- American Depository Receipts

Magnitude of International Equity Trading

During the 1980s world capital markets began a trend toward greater global integration. Diversification, reduced regulation, improvements in computer and communications technology, increased demand from MNCs for global issuance.

Cross-Listing of Shares

- *Cross-Listing* refers to a firm having its equity shares listed on one or more foreign exchanges.
- The number of firms doing this has exploded in recent years.

Advantages of Cross-Listing

- It expands the investor base for a firm.
- Establishes name recognition for the firm in new capital markets, paving the way for new issues.
- May offer marketing advantages.
- May mitigate possibility of hostile takeovers.

Yankee Stock Offerings

- The direct sale of new equity capital to U.S. public investors by foreign firms.
 - Privatization in South America and Eastern Europe
 - Equity sales by Mexican firms trying to cash in on NAFTA

The European Stock Market

- EASDAQ is a sort of a European NASDAQ that binds together national exchanges.
- UK, Germany, France, Switzerland, Austria, Italy, Belgium, Denmark, Portugal, Finland, Greece, Luxembourg, and the Netherlands.
- All trading is denominated in the euro.

American Depository Receipts

- Foreign stocks often trade on U.S. exchanges as ADRs.
- It is a receipt that represents the number of foreign shares that are deposited at a U.S. bank.

