

**CERTIFIED INVESTMENT AND FINANCIAL  
ANALYSTS**

**PART THREE  
SECTION SIX STUDY KIT**

**INTERNATIONAL FINANCE**

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## **SYLLABUS**

### **PAPER NO: 17 INTERNATIONAL FINANCE**

#### **GENERAL OBJECTIVES**

To equip the candidate with the necessary knowledge to advice on optimal financial decisions in an international setting

#### **17.0 SPECIFIC OBJECTIVES**

A candidate who passes this paper should be able to:

- Evaluate the operations of international financial markets
- Explain the workings of the foreign exchange markets and risk management strategies in international markets
- Evaluate the need for government in international finance management and international debt crisis
- Appreciate the role of the multinational corporations in international financial and capital flows
- Analyze the various finance issues related to multinational corporations

#### **CONTENT**

##### **17.1 The environment of international finance**

- International finance: Comparative advantage and trade, globalization of the world economy, the multinational corporation, goals of international finance
- International flow of funds
- Balance of payments accounting: international financial institutions, the international monetary system, multilateral financial institutions, bilateral financial institutions

##### **17.2 The foreign exchange market**

- The market for foreign exchange :functions and structure of foreign exchange market, the spot forward markets
- Parity relationships and forecasting exchange rates: interest rate parity and exchange rate determination; indices of currency movements and exchange rate speculation; purchasing power parity; fundamental and technical forecasting exchange rates; efficient, fundamental and technical approaches; forecasting performance and market efficiency; currency betas and consistent forecasts; international arbitrage
- Derivatives: Futures and options on foreign exchange; derivatives market; currency futures options; valuation of options; options; options pricing models Binomial and black-scholes models

##### **17.3 Government and exchange rates**

- Exchange rate systems: Fixed, floating managed-float and pegged systems
- Intervention in the foreign exchange market
- Deficit finance and exchange rates

#### 17.4 Exchange rate risk management

- Managing transactions exposure: identification of transactions exposure; hedging: Forward, money and options market hedges, limitations of hedging and short term exposure
- Managing economic exposure: measuring economic exposure, managing operating exposures, selecting low cost production sites
- Sourcing and diversification
- Managing translation exposure: translation methods, financial accounting standards, hedging translation exposure

#### 17.5 International Debt crisis

- International banking and money market: international banking services; capital adequacy standards; banking regulations among countries international money markets
- International bond and equity markets: long term financing decisions, foreign bonds, types of instruments, dual currency bonds , bonds market credit ratings, market capitalization (developed and developing countries), market structure, trading practices and costs, equity market benchmarks, trading in international equities

#### 17.6 international debt Crisis

- The international debt crisis
- Bank management of loan exposure
- Bank assessment of country risk
- Country risk assessment of procedures

#### 17.7 Interest rate and currency swaps

- Types of swaps: currency, interest rate, equity and commodity swaps
- Size of the swap market
- Variations of basic interest rate and currency swaps
- Put-call combinations
- Straddles, straps and strips in swap markets
- Risks of the interest rate and currency swaps

#### 17.8 International portfolio capital

- Diversification of risk in international investments
- Optimal portfolio selection
- Effect of changes in the foreign exchange rate
- Instruments of international diversification, bonds equities, country funds

#### 17.9 The multinational corporation

- Foreign direct investment (FDI): imperfect markets and FDI, benefits of international diversification, the direct foreign investment decision, political risks and FDI

- Multinational capital structures and the cost of capital: cost of capital, global versus local target capital structure, wholly versus partly owned subsidiaries, comparison of capital structure across countries, effect of foreign equity ownership restrictions, differences in the cost of debt and equity, cost of capital comparisons using the capital asset pricing model (CAPM)
- Multinational capital budgeting: capital budgeting subsidiary versus parent perspective, translation, the adjusted present value model, factors to consider in multinational capital budgeting, divestiture analysis, international acquisition, risks adjustment in capital budgeting analysis, country and political risk factors, financial risk factors, application of country risk factors, reducing exposure to host government takeovers
- Financing international trade: terms of payment in international trading, trade finance techniques, international trade institutions: imports and exports banks, forfeiting; medium term trade finance through discounting, counter trade
- Management of international cash balances: Bilateral netting of internal and external net cash flows, reduction in precautionary cash balances, transfer pricing and related issues, blocked funds, factors influencing financing in foreign currencies: interest rate parity, forward rate and exchange rate forecasts, financing with a portfolio of currencies, cash flow analysis for parent/subsidiary, optimization of cash flows, distortion of subsidiary performance

#### 17.10 The international tax environment

- The objectives of taxation: Neutrality and equity
- Types of taxation: income, withholding tax and VAT
- National tax environments
- Organizational structures for reducing tax liabilities
- Use of transfer pricing to reduce taxes
- Corporate behaviour and international tax laws
- Multinational corporate policy

#### 17.11 Ethics in the international financial environment

#### 17.2 Emerging issues and trends

## TOPIC ONE

### THE ENVIRONMENT OF INTERNATIONAL FINANCE

#### **Managing the Multinational Corporation**

The common objective of MNC is to maximize shareholders wealth. Managers are tasked with responsibility to make decisions that will maximize stock price and therefore serve the shareholders.

This way, firms can easily obtain funds from shareholders to support their operation. The focus of this subject is the MNC which own subsidiaries fully.

#### **Why MNCs expand internationally**

Three main reason or theories explain why firms become motivated to expand their operations internationally.

##### **1. The theory of comparative advantage**

Due to specialization, a firm's production efficiency increases and therefore can produce at lower costs in comparison to other firms which produce similar products or provide similar services e.g. USA and Japan have technology advantages while china and Malaysia have comparative advantage on labour cost. i.e. ability to produce a similar product/service at a lower cost.

The theory of comparative advantage says that firms or countries should produce and export goods or services they can produce efficiently and effectively. This fosters specialization and hence international expansion.

The Theory of absolute advantage on the other hand asserts that a country has absolute advantage over other country/countries if given the same amount of resources; they produce more of a particular product or services than their counterparts. i.e. ability to produce a similar product/service in larger quantities having been given the same amount of resources

##### **2. Imperfect market theory**

Due to lack of mobility of essential factors of production, there are costs and restrictions related to transfer of labour and other resources including regulations on fund transfers among other countries. This way firms often capitalize on foreign country resources.

### 3. Production cycle theory

Once a firm establishes an assumed home market, say because of local comparative advantage, against other competitors, the firm is likely to venture internationally first by expanding and later by establishing bases in foreign market and hence probing demand for its products abroad

#### Comparative advantage and international trade

**Comparative advantage** exists when a country has a **margin of superiority** in the production of a good or service i.e. where the **opportunity cost** of production is lower.

The basic theory of comparative advantage was developed by **David Ricardo**

**Ricardo's theory** of comparative advantage was further developed by Heckscher, Ohlin and Samuelson who argued that countries have different **factor endowments** of labour, land and capital inputs. Countries will **specialise** in and **export** those products which use intensively the factors of production which they are most endowed.

If each country **specialises** in those goods and services where they have an **advantage**, then total output and **economic welfare** can be increased (under certain assumptions). This is true even if one nation has an **absolute advantage** over another country.

Worked example of comparative advantage

Consider the data in the following table:

<b>Pre-Specialisation</b>	<b>CD Players</b>	<b>Personal Computers</b>
UK	2,000	500
Japan	4,000	2,000
Total Output	6,000	2,500

To identify which country should specialise in a particular product we need to analyse the internal **opportunity cost** for each country. For example, were the UK to shift more resources into higher output of personal computers, the opportunity cost of each extra PC is four CD players. For Japan the same decision has an opportunity cost of two CD players. Therefore, Japan has a comparative advantage in PCs.

Were Japan to reallocate resources to CD players, the opportunity cost of one extra CD player is 1/2 of a PC. For the UK the opportunity cost is 1/4 of the PC. Thus the UK has the comparative advantage in CD players.

*Specialisation and potential gains from trade*

<b>After Specialisation</b>	<b>CD Players</b>	<b>Personal Computers</b>
UK	4,000	0
Japan	2,400	2,800
Total Output	6,400	2,800

Output of both products has increased - representing a gain in **economic welfare**. Total output of CD players has increased by 2000 units and total output of personal computers has expanded by 500 units.

*Allocating the gains from trade*

For mutually beneficial trade to take place, the two nations have to agree an acceptable **rate of exchange** of one product for another. To work this out, consider the **internal opportunity cost ratios** for each country.

Without trade, the UK has to give up four CD players for each PC produced.

A **terms of trade** (or rate of exchange) of 3 CD players for each PC produced would be an improvement for the UK. In the case of Japan (specialising in producing personal computers) for each

<b>After trade (3 CD's for 1 PC)</b>	<b>CD Players</b>	<b>Personal Computers</b>
UK	2,200	600
Japan	4,200	2,200
Total Output	6,400	2,800

*compare with the original production matrix*

<b>Pre-Specialisation</b>	<b>CD Players</b>	<b>Personal Computers</b>
UK	2,000	500
Japan	4,000	2,000
Total Output	6,000	2,500

After trade has taken place, total output of goods available to consumers in both countries has grown. UK's consumption of CD players has increased by 200 and they have an extra 100 PCs. For Japan, they have an extra 200 CD players and 200 PCs.

Assumptions underlying the concept of comparative advantage

- **Perfect occupational mobility** of factors of production - resources used in one industry can be switched into another without any loss of efficiency
- **Constant returns to scale** (i.e. doubling the inputs in each country leads to a doubling of total output)
  - **No externalities** arising from production and/or consumption
  - **Transportation costs are ignored**

If businesses exploit **increasing returns to scale** (i.e. economies of scale) when they specialise, the potential gains from trade are much greater. The idea that **specialisation** should lead to increasing returns is associated with economists such as **Paul Romer** and **Paul Ormerod**

### **What determines comparative advantage?**

Comparative advantage is a **dynamic concept**. It can and does change over time. Some businesses find they have enjoyed a comparative advantage in one product for several years only to face increasing competition as rival producers from other countries enter their markets.

For a country, the following factors are important in determining the relative costs of production:

- The **quantity and quality of factors of production available** (e.g. the size and efficiency of the available labour force and the productivity of the existing stock of capital inputs). If an economy can improve the quality of its labour force and increase the stock of capital available it can expand the productive potential in industries in which it has an advantage.

- **Investment in research & development** (important in industries where patents give some firms significant market advantage)
- **Movements in the exchange rate.** An appreciation of the exchange rate can cause exports from a country to increase in price. This makes them less competitive in international markets.
- **Long-term rates of inflation** compared to other countries. For example if average inflation in Country X is 4% whilst in Country B it is 8% over a number of years, the goods and services produced by Country X will become *relatively more expensive* over time. This worsens their competitiveness and causes a switch in comparative advantage.
- **Import controls such as tariffs and quotas** that can be used to create an artificial comparative advantage for a country's domestic producers- although most countries agree to abide by international trade agreements.
- **Non-price competitiveness of producers** (e.g. product design, reliability, quality of after-sales support)

Here are four ways that globalization has had a positive impact on the world economy:

### 1. More efficient markets

Efficient markets should be what every economy strives for. Essentially, the sign of an efficient market is where there is an equilibrium between what buyers are willing to pay for a good or service and what sellers are willing to sell for a good or service.

If you can improve the way you produce a good or service by doing things such as outsourcing certain processes or buying from an overseas supplier that offers discounts, you can then afford to lower your selling price which results in increased demand and affordability.

Even if businesses don't lower prices, they can make additional profits and then reallocate that excess profit into doing things like increasing wages, taking on more investments or even creating more expansion projects.

### 2. Increased competition

Anytime that you have multiple producers competing for a hold of the economy, that's a good sign for consumers, as the quality of goods and services often goes up as a result.

When businesses started to venture across international borders, what they often did was introduce a new standard into the global marketplace. Consumers then had more options to choose from.

With more competitors to fight over market share, each company has to constantly look to improve their goods or services or create more value for their customers.

This means better products and sometimes lower prices, which is always a good thing for buyers.

### **3. Stabilized security**

When your economy depends largely on another country's economy, it is hard to imagine either one of the countries attacking the other. In a weird sort of way, globalization helped heighten world security.

Although this may seem kind of twisted since there is so much violence that still goes on in the world, the fact remains that globalization has halted many conflicts that could have turned ugly if their country's financial health didn't depend on the other.

### **4. More wealth equality throughout the world**

Hundreds of thousands of people around the world now have jobs, have started their own businesses and can provide comfort for their families.

## **Agency problems**

Managers of a MNC may make decisions, which conflict the firm's goal to maximize shareholder wealth e.g. a manager may want to expand a subsidiary with a view to getting better compensation rather than to enhance the value of the firm.

### **What exacerbates agency problem?**

- i. MNCs with scattered subsidiaries around the world may find it difficult to monitor management in far off distances.
- ii. Cultural differences may not favour adoption of uniform goals
- iii. Big size of an MNC can also create large agency problems without establishing controls; it may be difficult to monitor the operations.

### **Preventing agency problems**

- i. Parent control of the subsidiary

The parent company should clearly communicate the goals for each subsidiary so that subsidiaries focus on maximizing the value of the MNCs.

Implement a compensation plan to reward managers of subsidiaries who satisfy MNC goals  
MNC can oversee subsidiary decisions to check whether they are in line with MNC goals.

- ii. Corporate control of Agency problems.

If MNC manager makes a poor decision, another firm will be able to acquire it at low price and remove weak managers.

### **Constraints Interfering with MNC goals**

#### **1. Environmental constraints**

Each country enforces its own environmental laws and standards. Building codes, disposal of production waste materials, pollution controls and some of the laws in different foreign countries where MNC operate all these may add to production costs.

#### **2. Regulatory constraints**

There are factors such as taxes, currency convertibility, earnings remittance, employee right and other policies. All these may influence cashflows

Also change in these regulations may require change in financial policies

#### **3. Ethical considerations**

A business practice that is perceived to be unethical in one country may be totally ethical in another e.g. a MNC giving out bribe to secure a contract may be considered unethical in USA but this may not be a serious offence and can actually be allowable in other countries

### **Methods of conducting international business**

#### **a) International trade**

This is a conservative approach where firms enter through exports and imports of supplies. This approach entails minimal risk because the firm does not place any of its capital at risks.

#### **b) Franchising**

This obligates a firm to provide specified sales and services strategy support assistance and possibly initial investment in infrastructure in exchange for periodic fees, examples of franchises are McDonalds, KFC, Wimpy, Hardrock etc

#### **c) Licensing**

This obligates a firm to provide its technology in exchange for fees and some other specified benefits e.g. Verizon communication has an agreement to build and operate part of India's telephone system at a fee.

#### **d) Joint Venture**

This is a venture jointly owned and operated by two or more firms. Many firms penetrate foreign countries by combining forces with firms residing in those markets. This way it reduces the cost of initial investment.

**e) Acquiring existing operations**

This allows firms to have full control over their businesses and quickly obtain a large portion of foreign market base.

**f) Establishing new foreign subsidiaries**

Just like in the case of foreign acquisition, this also requires heavy investments.

**g) Turn-key project**

This is a situation where an MNC purchases a complete project before it starts operations at cost plus some agreed profit. This is common in the construction industry

**Uncertainties surrounding an MNC cashflows**

**1) Exposure to international economic conditions**

If an economic condition in a foreign country weakens, the income of consumer becomes relatively low leading to low purchasing power and decline in demand therefore lower cashflows.

**2) Exposure to international political risks**

Increased taxes and erection of barriers may weaken the profitability of an MNC subsidiary. Conflict between two countries may also result in boycott of an MNC product

**3) Exposure to exchange rate risks**

If foreign currency of a country where the MNC is operating weakens suddenly, the parent MNC will receive less upon conversion and this may reduce the value of the MNC.

**INTERNATIONAL FLOW OF FUNDS**

Flow of funds facilitates international business with money flowing from one country to another. Balance of payment measures international money flow.

A nation's international transactions are captured in their balance of payments. Essentially an accounting balance sheet, the BOP is divided into two ledgers. The current account measures trade in goods and services, while the capital account documents trade in financial assets. A country's accounts must balance, meaning that any deficit in the current account must be offset by a surplus in the capital account. Thus by definition, a country with a current account deficit consumes more than it produces and must borrow savings from abroad.

Economic theory provides little guidance on the optimal level of the current account. The macroeconomic impact of a current account imbalance depends on how a nation uses the imported capital as well as how much it has borrowed from abroad in the past. As with any borrower, a nation's ability to service its future foreign debts without drawing down future consumption turns on whether it uses the capital to finance current consumption or investment.

Persistent current account deficits generally lead to a rise in a country's net external indebtedness and a growing risk premium on its debt. In addition, if foreign capital inflows do not balance the current account, then changes in interest rates, exchange rates, and other economic variables usually result. Empirically, we observe a positive relationship between a nation's accumulated current account deficit and the real long-term interest rates that a government pays on its debt. In addition, countries that run chronically large current account deficits tend to suffer currency depreciation over time.

The short-term relationship between a nation's current account balance and its currency is difficult to predict because it depends on a broad set of factors. An appreciating currency dampens foreign demand for a nation's goods and services while making foreign goods cheaper so it usually raises the country's merchandise trade balance. Furthermore, if a country is running a large current account deficit, then the adjustment of the deficit toward balance typically requires that the real value of that country's currency fall relative to the currency of its major trading partners to improve the country's trade balance. However, whether a country's current account balance will respond to an adjustment in the currency value depends on other factors such as the state of the economy and the desirability of a country's assets in international markets.

This chapter is organized around three major topics: First, we define the BOP and describe the standard national income identities as they relate to the 130P. A case study of the US-Japan bilateral trade balance is used to illustrate these concepts. Second, we explain the macroeconomic implications of the 130P, principally as it relates to inflation and interest rates. New Zealand's current account problems in the mid-1980s demonstrates how extreme saving - investment imbalances can damage an economy. Lastly, we describe both the short-term and long-term influences of the BOP on exchange rates. Recent trends in the US current account illustrate the structural impact of different sources of current account deficits.

## **DEFINING THE BALANCE OF PAYMENTS**

Fundamental supply and demand for currency is derived from international trade in goods and services, foreign direct investment, or capital flows. The **balance of payments** is the broadest bookkeeping legend of a country's commercial transactions with the rest of the world. The two portions of the BOP are the **current account**, comprised of all cross-border goods and services trade; and the **capital account**, in which international asset transactions are measured. It is important to understand a country's balance sheet because entries in the BOP usually involve a foreign currency transaction.

The **current account** is the sum of a country's merchandise trade balance, service balance, and unilateral transfers within a period of time. The **merchandise trade balance** is the difference between the value of what a country exports and what it imports. The **service balance** is composed of interest payments, dividends, freight and insurance, and tourism. The **unilateral transfers balance** aggregates such items as governmental aid and the repatriation of foreign earnings.

Cross-border financial transactions for a given period are measured in a country's **capital account**. These transactions can be associated with either international trade or simple portfolio shifts in the form of government or private bonds, equities, or bank deposits.

A country's balance of payments accounts **must** balance. The capital account exactly offsets the current account which means that a current account surplus exactly equals a capital account deficit and vice-versa. Thus, the net change in the ownership of foreign assets is represented by the current account. A current account deficit resulting from a trade deficit must be offset by an equal amount of foreign borrowing or investment or by running down the central bank's foreign exchange reserves. Nations with large reserves of foreign assets can sustain modest current account deficits without a major macroeconomic adjustment. Nations that must chronically borrow abroad to finance their current account deficit remains at the mercy of foreign creditors to finance the debt.

## BALANCE OF PAYMENT IDENTITIES

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Another way to regard the current account balance follows the identity of national income accounts. Recall that in equilibrium an open economy's total output (Y) equals consumption (C), plus investment (I), plus government spending (G), plus net exports (X - IM). Symbolically, this statement can be represented by:

$$Y = C + I + G + (X - IM).$$

It is also a basic identity that total output (i.e., GDP) can either be consumed (C), saved (S), or taxed by the government (T):

$$Y = C + S + T.$$

These two expressions for Y are necessarily equivalent in equilibrium. Netting out consumption from both sides and rearranging terms involving the government on the left-hand side and the private sector on the right reveals:

$$G - T = (S - I) - (X - IM).$$

In other words, the government balance, (G - T), equals the economy's private saving balance, (S - I), minus the trade balance, (X - IM). Since any imbalance in the current account must be balanced by an equal and opposite amount in the capital account, we can replace the current account balance term, (X - IM), in the previous expression with **net capital flows**:

$$G - T = (S - I) + \text{net capital flows}.$$

The elements of a country's balance of payments can be expressed in terms of its savings and investment balance:

$$\text{current account} = (S - I) - (G - T) = \text{capital account}$$

This equation is the **basic current account identity**: the current account balance is equal to private after-tax savings minus private investment spending minus government savings.

Intuitively, if the supply of after-tax savings falls short of a nation's private investment demand and government deficit, then the economy will run a current account deficit.

The national income identity means that one or more of three things must happen to reduce or eliminate a current account deficit. First, with static investment and the public deficit, private savings must rise. Second, holding savings and the government deficit constant, the propensity of private firms to invest must fall. Or third, for a given quantity of private savings and investment, the government's budget deficit (i.e., the government's lack of propensity to save) must decline.

### **Components of the Balance payments**

i. Current account

This represents a summary of the flow of funds between one specified country and all the other countries due to purchases and goods and services or the provision of income in financial assets (interest and dividend) and transfer payment of aid, grants and gifts.

ii. Capital account

This represents a summary of flow of funds resulting from the sale of assets between of one specified country and all other countries over a specified period of time.

Capital includes the value of non produced, non-financial assets that are transferred across burden such as patents and trademarks.

iii. Financial Account

These one's however payments of direct foreign investments. Portfolio investment and other capital investments which are short term in nature including marketable securities. Portfolio investment represent long term financial asset (such as stocks and bonds) between countries that do not affect the transfer of control e.g. a purchase of stocks of Ugandan companies by a Kenyan investor represent a purchase of foreign financial assets without a purchase assets without changing the control of the company.

### **Factors affecting international Trade flow**

1. Inflation

Rise in inflation rate in one country relative to the countries with which it trades, its current account will be expected to decrease other things being equal since there will be a decline in exports.

2. Impact of National Income

If a country income level increases by a higher percentage than those of other countries, other things being equal, its current account is expected to decrease due to increased demand for foreign goods

3. Impact of government policies

Policies such as subsidies, import restrictions, or lack of enforcement on piracy may affect international trade and consequently the balance of payment.

4. Impact of Exchange Rates

If a country's currency begins to rise in value against other currencies its current account balance should decrease ceteris Paribus since with a strong exports become expensive.

5. Balance of trade

This is simply the difference between the value of merchandise export and merchandise import and merchandise import.

Correction of balance of trade

Any policy that will increase foreign demand for the country's goods and services will improve its balance of trade position. This may include the devaluation of currency to encourage export.

**Agencies that facilitate international flow of funds**

i. Multinational financial institutions

This has been established by more than one country and hence subject to international law, generally they are owned by the government or other international institutions e.g. World Bank, IMF, and IFC. Some are regionally based e.g. Asian development bank, East African development bank and African development bank.

ii. Bilateral Financial Institution

These are established by individual countries to finance project in less developed countries especially German Investment Bank, Netherland Development finance company.

**International Monetary Fund (IMF)**

**Objectives:-**

- i. Promote cooperation among countries on international monetary issues
- ii. Promote stability in exchange rate for e.g. the IMF does this by injecting foreign currencies into a country to put downward pressure on the foreign currency which a country needs.
- iii. Provide temporary fund to member states attempting to correct imbalance of international payments.
- iv. Promote free mobility of capital funds across country and by extension promote free trade by urgent country to remove barriers

One of the key duties of IMF is its compensatory financing facility which attempts to resolve the impact of export instability on country's economic management. This facility is mainly used by developing countries. The financing by IMF is measured by unit of accounts known as special drawing right.(SDR) the SDR is not a currency itself but it is an international reserve asset created by IMF. The SDRs values fluctuate in line with prices of major currencies.

**World Bank (international bank for reconstruction and development)****Objectives:-**

To avail loans to countries to enhance economic development. Its main source of fund is by issue of bonds and other debt instrument to private investors and government. The World Bank has a profit oriented philosophy.

The world bank provides only a small portion of the financing needed by developing country it attempts to spread its financing by entering in the financing agreement in the following ways:-

- i. With the help of export credit agencies
- ii. With official and agencies
- iii. With commercial banks

**International Finance Corporation**

This was formed to promote private enterprises within countries. It is composed by a number of member nations. IFC works to promote economic development through private and government sector. It typically, provides 10%-15% of the necessary fund of the private enterprise project in which financing it invests and the remainder of the project financing is sourced elsewhere. It therefore acts as a catalyst for development.

**TOPIC TWO**

## FOREIGN EXCHANGE MARKET

The act of borrowing investing internationally typically requires the use of the forex markets. By allowing currencies to be exchanged, the forex markets facilitate international trade and transactions.

MNCs rely on the forex markets to exchange their home currency for a foreign currency that they need to purchase imports or to use for foreign direct investments.

MNCs also need forex markets to exchange a foreign currency they receive into their home currency.

### **The Spot Market**

The most common type of forex transactions is for immediate exchange at the spot the spot rate. This transaction occurs at the spot market.

- Banks buy currencies for each other at agreed rates.
- Discrepancies in the market are cleared by markets forces of demands and supply.
- The opening rate should the closing rate of the last trading day, but this can be influenced by prevailing between closing and opening time.

### **Spot Market Liquidity**

This is influenced by level of trading activity; the more willing buyers and sellers are, the more liquid market is.

If a currency is illiquid, the n<sup>0</sup> of willing buyers and sellers is limited and this is more so with currency (ies) of LCDs.

### **Forward Transactions**

A forward contract specifies, the amount of a particular currency that will be purchased/sold by a MNC data specified future date and a specified exchange rate .This way they guard against fluctuations in the spot in the spot rate

### **Bid-Ask Spread.**

Commercial banks charge fees for conducting forex transactions. At any given time, a banks bid (buy) quote for foreign currency will be less than it's 'ask' (sell) quote.

The bid-asks spread represents the differential between the bid and ask quote and is intended to cover the costs in accommodating to exchange currencies.

It's expressed as 9% of the ask quote.

For instance, if you have \$ 10,000 and you need sterling pounds.

For the ask quote is \$ 1.6 for the £ and the bid quote is \$1.5 for the £

### **What's the bid- ask spread?**

For the bid-ask spread

$$\begin{aligned} &= \frac{\text{Ask rate} - \text{Bid rate}}{\text{Ask rate}} \\ &= \frac{1.60 - 1.50}{1.60} \\ &= 6.25\% \end{aligned}$$

### **Factors affecting the spread**

Spread = f (O<sub>c</sub> +I<sub>c</sub> +Volume+C.r)

Spread is a function of order costs, inventory costs, competition, volume and currency risks.

- **Order costs.**

This includes cost of processing orders including clearing costs and the cost of recording transactions.

Increases in ordering costs increases spread

- **Inventory costs.**

These are the costs of maintaining inventory of a particular currency. Holding inventory involves opportunity costs because of the sacrificed alternative in the use of money.

Increases in inventory/opportunity costs increases spread

- **Competition.**

The higher the competition in a given area, the lower the spread.

Increases in completion decreases spread

- **Volume**

The more liquid currencies are less likely to experience a sudden change in price.

Increases in volume decreases spread

- **Currency risk**

Some currencies exhibit more volatility than others because of economic and political conditions that force the demand to and supply of a currency to change.

Increases in Currency risk increases spread

### **Cross Exchange Rates**

They represent the relationship between two currencies that are different from one based currency, for instance two non Kenyan currencies.

It's possible to determine the rate of currency from another by dividing a rate by how they relate with the common currency (Ksh.)

One can reasonably calculate how, the Uganda shilling will relate to the Tanzania shilling by comparing how they relate with the ksh.

Implied exchange rate of two currencies determined by a common 3<sup>rd</sup> currency.

## INTERNATIONAL ARTRAGE AND PARITY RELATIONSHIPS

### LNTERNATIONAL ARBITRAGE

Arbitrage can be defined as capitalizing on a discrepancy in quoted prices by making a riskless profit. The strategy normally does not require an investment of funds to be tied up for a length of time and does not involve any risk.

Due to movements, prices do realign.

#### Types of arbitrage

- **Locational Arbitrage**

When quoted exchange rates do vary among locations, participants in the FOREX markets can capitalize on the discrepancies.

Participants will use locational arbitrage, the process of buying a currency at a location where it's cheap and immediately selling it at another location, where it's priced higher.

It's conducted by banks or other forex dealers whose computers can continually monitor Quotes provided by other banks. An assumption is that there is no loss from bid-ask spread.

Consider the following quotations;

	<b>Bank A</b>		<b>Bank B</b>	
<b>NZ quote</b>	Bid	Ask	Bid	Ask
	\$0.635	\$ 0.645	\$0.645	\$0.650

How would an arbitrage use \$10,000 to take advantage of locational arbitrage?

(10,000 x 0.064)

## Solution

Use 10,000 USD to buy NZD at bank A, AT 0.640-bank's ask rate, That gives the arbitrageur NZD 15.625, then give to bank B the NZD at 0.645- bank's bid. Resulting to a gain of \$ 78.

- **Triangular Arbitrage**

It is also referred to as cross country arbitrage or free point arbitrage.

Its exploiting opportunities existing among three different currencies in forex markets .Its possible to use triangular arbitrage in which currency transactions are conducted in the spot market to capitalize in the spot market differences between currencies.

### Illustration;

Assume the following bank quotations.

$$1\text{£} = \$ 1.60$$

$$1 \text{ Ringitt} = \$ 0.20$$

Quoted ( $1\text{£} = 8.1 \text{ Ringitts}$ )

Determine the profit which can arise from triangular arbitrage, if one hold \$ 10,000

Determine the close exchange rate between the Riingit and pound using the dollar

$$1\text{£} = \frac{1.6}{0.2}$$

$$= 8.0 \text{ Ringitt for pound}$$

Therefore an arbitrage opportunity exists because the Quoted rate 8.1 ringitt/£ differs from the cross exchange rate.

Rongitt and £, the £ is weaker than its thought to be in the market.

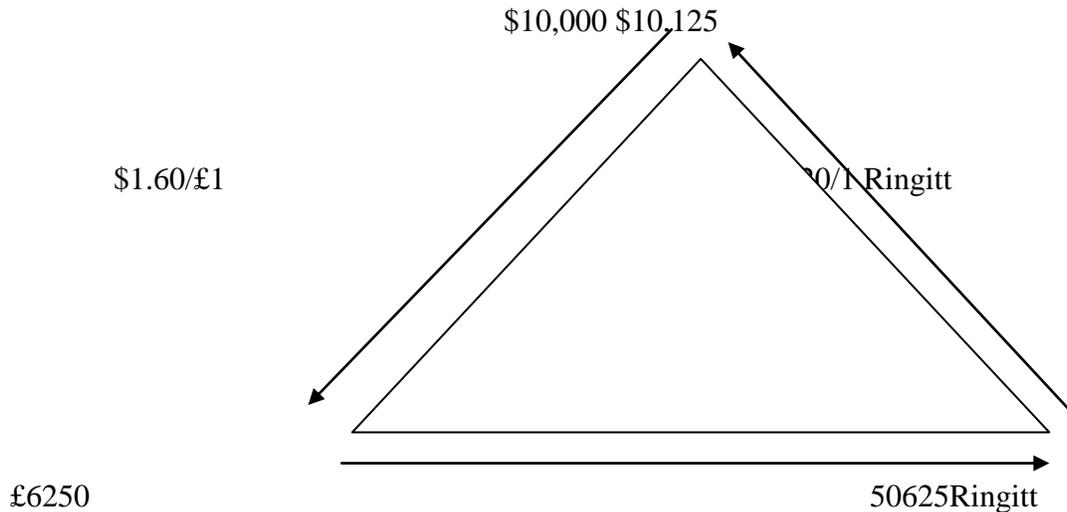
Quoted rate > Cross exchange rate,

Quoted rate < Cross exchange rate

To take advantage of the arbitrage opportunity, we first convert the currency at hand to which the cross currency rate purports to be weaker.

Convert the sterling pound to the Ringitt, and lastly the Ringitt back to the American dollar.

The process is depicted as follows;



The result is the arbitrageur will have a final benefit of \$125 (10125-10000)

### Covered interest arbitrage

This is the process of capitalizing on the interest rate differential between two countries while covering one's exchange rate risk.

Covered in this case means hedging ones position against exchange rate risk. Covered interest arbitrage may mean funds to be invested are borrowed locally. If capitalizes on the discrepancies between the forward rate and interest rate differential.

### Illustration

John can use 800,000 USD to take advantage of arbitrage opportunity.

The current spot rate of the pound is \$ 1.60 .The 90 day forward rate of the pound is \$ 1.60. The 90 day US rate is 2%. The 0 day rate in UK is 4

5. How can John use covered interest arbitrage to gain from arbitrage opportunity.

## Solution

### Step I

Determine the amount of money to borrow from US (amount borrowed plus 2% interest over 90 days should equal to 800,000 USD)

$$\frac{800\,000}{1.02}$$
$$= 784,313.73 \text{ USD.}$$

### Step II

Convert the amount received into sterling pound and invest over 90 days in UK at 4%. This result into principal and interest of;

$$= \frac{784,313.73 \times 1.04}{1.60}$$
$$= 509,803.92 \text{ pounds}$$

Convert the 509,803.92 pounds into dollars

$$509,803.92 \times 1.60$$
$$= 815,686.27 \text{ USD.}$$

### Step IV

Pay off the loan from the US bank i.e. the 800,000 USD leaving the arbitrageurs with an arbitrage profit of

$$= 15,686.27 \text{ USD}$$

## Exchange rate determination

An Exchange rate measures the value of one currency in units of another currency. A decline in a currency value is often referred to as depreciation, while the increase is referred to as appreciation. The % change in value of a foreign currency is depicted as

$$\frac{S - S_{t-1}}{S_{t-1}}$$

Where;

S is the current spot rate,

S<sub>t-1</sub> earlier dates spot rate.

The price of a currency is determined by demand of that currency, relative to its supply. The meeting of quantity supplied and demanded, bears the equilibrium.

### **Devaluation**

The devaluation of currency is the deliberate effort by the country's regulatory authority to lower the value of its currency with a view to achieving specific macroeconomic goals such as boosting export trade hence improving balance of payments.

### **Factors that influence foreign exchange rate.**

They can be summarized by  $e = f(\Delta \text{INF}, \Delta \text{INT}, \Delta \text{AGC}, \Delta \text{Exp})$

- **Relative inflation rates.**

Change in relative inflation rates affect international trade activity which influences the demand and supply of currencies, therefore influences exchange rates. Increase in inflation rates, makes its currency's demand, decrease since consumers would prefer imports.

- **Relative Interest rates**

When i. rates in a country rise, they will be more demand for a country's currency hence higher exchange rates.

- **Relative income levels.**

Since income can affect the amount of imports demanded, it can affect exchange rates. Ordinarily, citizens of a country would prefer imports when their incomes rise.

## ○ **Government Controls**

The government policies affect exchange rates through the following ways;

- Imposing forex barriers
- Imposing foreign trade barriers
- Intervening (buying and selling currencies) in forex markets.
- Expectations

Foreign exchange markets to any news that may have a future effect e.g. expectations of inflation may put downward pressure on a currency since they will be increased sale of a currency.

## **Exchange rate Speculation**

Many banks attempt to capitalize on their forecast of anticipated exchange rates movements in forex markets.

## **Forecasting exchange rates**

### **Reasons for forecasting exchange rates**

#### **Hedging decision**

MNC constantly face the decision of whether to hedge future payable/receivables in foreign currencies and the decision will be made depending on its forecasts of foreign currency values.

#### **Short term financing decision**

When large corporations borrow, they have access to several different currencies that ideally will exhibit low i. rates and weaken in value over the financing period.

#### **Short term investing decision**

The ideal currency for deposits will;

- i) Exhibit high interest rates
- ii) Strengthen in value of the investment period.

### Capital budgeting decisions

Firms recognize over the project period, the project may require the exchange of currencies and capital budgeting analysis can only be possible when all the cash flows are measured in parents local currency.

### Earnings assessment

The parent's decision about whether a foreign subsidiary should reinvest earnings in a foreign country or remit back to the parent country may be influenced by the forex forecast.

### Longterm Financing decisions

Corporations that issue bonds to secure long term funds may consider denominating bonds in foreign currency. They would prefer that currency borrowed depreciates over time against the currency they are receiving from sales. The forecast of exchange rates are required.

The limitation of technical forecasting is that it can't precisely estimate future exchange rates involving longer periods.

i) **Fundamental forecasting** – Its based on fundamental relationships between economic variables and exchange rates such as inflation, interest rates, income levels, government control expectations. Given current values of these variables along with their historical impact on a currency's value, corporations can develop exchange rate projects.

### PARITY RELATIONSHIPS

Parity relationships pertains to the law of one price which argues that in the long run, the prices of goods and services will be the same irrespective of the location where they are bought and sold.

### Purchasing Power Parity.

P.P.P. is an economic theory that estimates the amount of adjustment needed on the exchange rate between countries in order for the exchange to be equivalent to each currencies purchasing power. There are two forms;

→**Absolute P.P.P.**: it asserts that without international barriers, consumers shift their demand to

Where prices are lower, if discrepancies as measured by common currency exists,

The demand should shift so that prices converge. However, existence of transport

Costs, tariffs, quotas, etc may prevent absolute form of P.P.P.

→ **Relative P.P.P.**; it accounts for possibility of market imperfection such as transportation costs,

Tariffs and quotas. It does however state that the rate of change in prices of baskets should be somewhat similar when measured in a common currency as long as transportation cost and trade barriers are unchanged.

### **P.P.P Rationale.**

It asserts that if two countries produce products that are substitutes for each other, the demand for the product should adjust as inflation rates differ. The formulae for purchasing power parity is;

$$ef = \frac{1 + l_f}{1 + l_n} - 1$$

Where;

$ef$  = % change in foreign currency

$l_f$  = home country inflation rate

$l_n$  = foreign country inflation rate

Assume exchange is initially in equilibrium, then home currency experiences a 5% inflation rate, while foreign currency experiences 3%. According to PPP adjusts as follows;

### **Solution;**

$$= \frac{1 + 0.05}{1 + 0.03}$$

$$= 1.94\%$$

This means there will be 1.94% increase in foreign currency. However if foreign currency has an inflation rate of 4% and home currency has an inflation rate of 7%, then the PPP will be;

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