Block

2

FOREIGN EXCHANGE TRANSACTIONS

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Block 2: Foreign Exchange Transactions

This block discusses the significance of foreign exchange transactions. It outlines various types of exchange rate indicating the significance of international trade in the wake of globalization. With the increase in cross border trade, companies from different economies trade, exchanging various products and services with variety of currencies. This block outlines the evolution of international monetary systems and discusses the importance of foreign exchange markets, exchange rate determination and exchange rate forecasting.

Unit 5 deals with *International Monetary System*. It covers at length the exchange rate mechanisms such as fixed rate, floating rate, and with limited flexibility. Further, this unit explores the evolution of different monetary systems and the emergence of the European Monetary System.

Unit 6 deals with *The Foreign Exchange Market*. It highlights the significance of foreign exchange markets, their structure, exchange rate quotations and different types of transactions. Besides, this unit discusses the significance of settlement dates, how to quote merchant transactions and how to deal with early delivery, extension and cancelation of forward contracts in India.

Unit 7 deals with *Exchange Rate Determination*. It discusses the law of one price and the relationship between various variables that determine the exchange rates across different countries. This unit explains the relationship between goods and exchange rates using purchasing power parity, and interest rates and exchange rates using interest rate parity.

Unit 8 deals with *Exchange Rate Forecasting*. It covers a plethora of factors that determine the currency forward rates. It elaborates on the exchange rate forecasting models such as the demand and supply approach, the monetary approach, the asset approach, and the portfolio balance approach. The role of technical analysis in exchange rate forecasting is also dealt in this unit.

Unit 5

International Monetary System

Structure

"The international monetary system is the glue that binds national economies together".

- Barry Eichengreen, American economist and economic historian

5.1 Introduction

The international monetary system is a well-designed system that regulates the exchange rate mechanism, valuations, and exchange of money across countries.

In the previous unit, various theories have been propounded explaining the reasons behind balance of payments. We have also seen that financial markets are getting integrated with people and firms entering into more cross-border financial deals.

To make these transactions feasible, a system for the determination of the amount and method of payment of the underlying financial flows is needed. Since the domestic currencies of the trading partners involved would be different, the flows will have to take place in some mutually acceptable currency. The parties involved will then need to convert the amount involved into their respective domestic currencies. This require a regulatory framework for operational convenience.

The set of rules, regulations, institutions, procedures, practices, and mechanisms which determine the rate at which this conversion takes place called the exchange

rate. The movements in the exchange rates over a period comprise the 'International Monetary System'.

International Monetary System forms the backbone for all cross-border transactions because it makes possible the settlement of international payments. Such settlement of transactions takes place by conversion of currencies and transfer of funds across nations, which is possible due to the availability of the international monetary system. These transactions may be due to international trade in goods or services, or due to acquisition or liquidation of financial assets, or because of creation or repayment of international credit. By making all these operations possible, a smoothly running international monetary system contributes to a more efficient utilization of world resources.

This unit covers the genesis of international monetary system and various aspects of the exchange rate mechanisms followed by various countries, and how it evolved over the past few decades. The unit also discussed the various models of fixed and floating rate systems and the evaluation of institutional frameworks like IMF, World Bank, European Monetary System.

5.2 Objectives

After studying this unit, you should be able to:

- Evaluate the pros and cons of various exchange rate mechanisms
- Distinguish the differences between fixed and floating rate systems
- Elaborate the exchange monetary systems with their relevant corrective mechanisms
- Discuss the scope and nature of various institutions involved in the activities of the current monetary system
- State the exchange rate mechanisms followed by various countries, post Bretton Woods System
- Enumerate on the scope, nature, significance, and statute of the European Monetary System

5.3 Exchange Rate Mechanism

An 'exchange rate' is formally defined as the rate of conversion of one currency in terms of another currency. For example, 1US$-82.0000. There are different ways in which exchange rates can be determined. Exchange rates may be fixed, floating, or with limited flexibility. Different systems have different methods of correcting the disequilibrium between international payments and receipts, which is one of the basic functions of these mechanisms.

5.3.1 Fixed Exchange Rate System

As the name suggests, under a fixed (or pegged) exchange rate system, the value of a currency in terms of another is fixed. These rates are determined by governments or the central banks of the respective countries. The fixed exchange rates result from countries pegging their currencies to either some common commodity or to some currency. There is generally some provision for correction of these fixed rates in case of a fundamental disequilibrium. Examples of this system are the 'Gold Standard' and the Bretton Woods System. The variations of the fixed rate system are:

- Currency Board System
- Target Zone Arrangement
- Monetary Union.

Currency Board System

Under a 'Currency Board System', a country fixes the rate of its domestic currency in terms of a foreign currency, and its exchange rate in terms of other currencies depends on the exchange rates between the other currencies and the currency to which the domestic currency is pegged.

The monetary policies and economic variables of the reference country are reflected on the exchange rate in terms of domestic currency. If the fundamentals of the domestic economy show a wide disparity from that of the reference country, there is a pressure on the exchange rate to change accordingly.

If any country say country A is heavily reliant on a particular country say country B, country A pegs its currency with country B. For example, some trade-reliant countries like Hong Kong, Singapore, and Malaysia pegged their currency with US $.

This may result in a run on the currency, thus forcing the authorities to either change, or altogether abandon the peg. To prevent such an event, the monetary policies are kept in line with that of the reference country by the central monetary authority, called the *currency board*. It commits to convert its domestic currency on demand into the foreign anchor currency to an unlimited extent, at the fixed exchange rate. The currency board maintains reserves of the anchor currency up to 100% or more of the domestic currency in circulation. These reserves are generally held in the form of low-risk, interest-bearing assets denominated in the anchor currency. An internationally accepted, relatively stable currency is generally selected as the anchor currency, for example US dollar.

The 'currency board' does not have any discretionary powers over the monetary policy. The market mechanism automatically sets the interest rates. If demand for the anchor currency rises and people start converting more of the domestic

currency into the anchor currency, and as a result the reserves with the currency board get depleted. As the currency in circulation must be backed by the anchor currency reserves, any depletion of reserves results in a contraction of the domestic currency's supply. This, in turn, will result in an increase in the domestic interest rates. A high domestic interest rate increases the demand for the domestic currency as more people become interested in investing in the economy. This increases the supply of the 'anchor currency' and eliminates the pressure on the domestic currency. The opposite will happen in case of an increase in the supply of the 'anchor currency'. The interest rates, thus, act as the force which brings back the forex markets to equilibrium.

Unlike a central bank, the 'currency board' does not even have the power to print unlimited amounts of money. Due to the requirement of the domestic currency being backed by reserves of anchor currency, the board can print only as much currency as can be backed by its existing reserves. This prevents the board from lending to either the government, or the domestic banks. As government's deficits are not automatically monetized, it must finance its operations by either raising tax revenues, or by borrowing in the market. The market determined interest rates keep the government borrowing, and hence, spending under check. Thus, forces fiscal discipline. At the same time, as neither of the sources of funds (taxes and borrowings) increases the money supply, there is no inflationary pressure on the economy due to government spending.

Since the board does not lend to even the domestic banks, it cannot act as the lender of last resort. On the one hand, this ensures more prudent policies on the part of banks while on the other hand, it would result in even sound banks 'going under' at the time of a financial panic.

The biggest advantage of a 'currency board system' is that it offers stable exchange rates, which acts as an incentive for international trade and investment. The discipline enforced on the government and the financial system also helps in improving the macroeconomic fundamentals eventually.

Among the drawbacks, the foremost is the loss of control over interest rates. The equilibrium in the forex markets is established at the point where the domestic interest rates in the economy are in accordance with the underlying economic fundamentals of the domestic, and the anchor currency economy, and the fixed exchange rate. A high inflation in the domestic markets can result in low or even negative real interest rate. This may trigger an *'asset price bubble'*[1] as money is borrowed at low interest rates and put in financial and real assets. The excess demand for these assets makes their prices go up to unrealistically high levels.

[1] When the prices of an asset, such as housing, stocks or gold, become over-inflated we call it as asset bubble/ asset-bubble-causes-examples-and-how-to-protect-yourself-3305908

When interest rates start rising due to any endogenous or exogenous reasons, investors in these real assets start selling so that they could invest in bonds where higher incomes are possible. Due to the excessive selling pressure, the price of the real assets is likely to fall.

Interest rates cannot be used to control inflation levels in an economy, and hence the levels of economic activity. The economy may thus become exposed to phases of painful contraction and inflation. Further, this system, to operate efficiently, needs wages to be flexible. In case of the domestic economy facing a higher degree of inflation than the anchor currency country, or in case of an exogenous shock like a fall in the export prices, a movement in the exchange rates is not possible in this system. Thus, the adjustment must come via domestic wages. If these prove to be sticky, the domestic currency becomes overvalued, and the domestic goods become uncompetitive in international markets.

A good example of a 'currency board' is that of Hong Kong. Hong Kong $ is pegged to US$ since 1983. In addition to the currency being pegged to the US Dollar (at HKD 7.75 – 7.85/$), a 'currency board' (established in 1983) ensures that reserves to the extent of at least 100 percent of the domestic currency are maintained. The current band was set in 2005 and has never been broken.

Argentina also followed this system. The Argentine peso was convertible into one dollar with effect from 1991, though the system ended in the year 2001.[2] After 2001, the fixed agreement with the USA expired, and since 2002, exchange rates have been fluctuating. As on 14th February 2023, the exchange rate of Peso was 1 USD = 191.7088 ARS.

Bosnia and Herzegovina, Brunei Darussalam, Bulgaria, China-Hong Kong SAR, Djibouti Estonia, Lithuania etc. follow currency board system.

Target Zone Arrangement

A group of countries sometimes get together, and agree to maintain the exchange rates between their currencies within a certain band around fixed central exchange rates. This system is called a 'Target Zone Arrangement'. Convergence of economic policies of the participating countries is a pre-requisite for the sustenance of this system. An example of this system is the 'European Monetary System' under which 12 countries came together in 1979, and attempted to maintain the exchange rates of their currencies with other member countries' currencies within a fixed band around the central exchange rate.

Monetary Union

'Monetary Union' is the next logical step of target zone arrangement. Under this system, a group of countries agree to use a common currency, instead of their individual currencies. This eliminates the variability of exchange rates and the

[2] https://www.oanda.com/currency/iso-currency-codes/ARS

attendant inefficiencies completely. The economic variables of the member countries must be quite proximate for the system to be viable. An independent, common central bank is set up, which has the sole authority to issue currency and to determine the monetary policy of the group. The member countries lose the power to use economic variables like interest rates to adjust their economies to the phase of economic cycle being experienced by them. As a result, the region experiences the same inflation rate. This is the most extreme form of management of exchange rates. For e.g., the formation of European Economic and Monetary Union represents the integration of EU economies having a common monetary policy and a common currency 'Euro'.

5.3.2 Floating Exchange Rate System

Under this system, the exchange rates between currencies are variable. These rates are determined by the demand and supply for currencies in the international market. These, in turn, depend on the flow of money between countries, which may either result due to international trade in goods or services, or due to purely financial flows. Hence, in case of a deficit or surplus in the balance of payments (differences between inflation rates, interest rates and economic growth of countries are some of the factors which result in such imbalances), the exchange rates get automatically adjusted and this leads to a correction in the imbalance.

Floating exchange rates are of two types: 'Free float' and 'Managed float'.

Free Float

The exchange rate is said to be freely floating when its movements are totally determined by the market. There is no intervention at all either by the government or by the central bank. The current and expected future demand and supply of currencies change on a day-to-day, and even a moment-to-moment basis, as the market receives, analyzes, and reacts to economic, political and social news. This, in turn, changes the equilibrium in the currency market and the exchange rates are determined accordingly. As the reactions to events do not follow a set pattern, the resultant movements in the exchange rates turn out to be quite random. Hence, a lot of volatility is observed in the markets following a 'free float' system. This system is also known as the 'clean float'.

Managed Float

The volatility of exchange rates associated with a 'clean float' increases the economic uncertainty faced by players in the international markets. A sudden appreciation of the domestic currency (a currency appreciates when it becomes dearer vis-à-vis the other currency and vice versa) would make the domestic goods more expensive in the international markets (as the same number of units of domestic currency, representing the good's cost, would then translate into a higher number of units of the foreign currency). This may result in making the domestic product uncompetitive, and hence reduce the exports. If any industry is

dependent on exports, it may even get wiped out. A sudden depreciation may lead to increased prices of imported goods, thereby increasing the inflation rate in the economy. These uncertainties increase the risks associated with international trade and investments, and thus reduces the overall efficiency of the world economic system. To mitigate these inefficiencies, central banks generally intervene in the currency markets to smoothen such fluctuations. Such a system is referred to as a 'managed float' or a 'dirty float'. This management of exchange rates can take three forms:

i. The central bank may occasionally enter the market to smoothen the transition from one rate to another, while allowing the market to follow its own trend. The aim may be to avoid fluctuations which may not be in accordance with the underlying economic fundamentals, and speculative attacks on the currency.

ii. Some events are liable to have only a temporary effect on the markets. In the second variation, intervention may take place to prevent these short- and medium-term effects, while letting the markets find their own equilibrium rates in the long-term, in accordance with the fundamentals.

iii. In the third variation, though officially the exchange rate may be floating, the central bank may intervene regularly in the currency market, thus unofficially keeping it fixed

Example: How a Depreciating Rupee is Impacting the Finances and India's Economy

The rupee is losing against the dollar on over the calendar year 2021 and the loss is over 6.5% in the year 2022. This is due to rising inflation, interest rates, exit of foreign investors, increase in imports due to surge in oil prices and markets going south. The depreciation of the ₹ is expected to impact the economy in general and other areas as well such as imports, increased fuel prices, which push up inflation further. The current account deficit is expected to widen to 3.2% of India's GDP as against 1.2% a year ago. There is a net foreign flow outflow of over $ 30 billion in 2022. Further, spot ₹ has been impacted, tracking weakness in Asian peers, while the $ is becoming stronger with surging treasury yields, in the US. There is a cheer in exporters, who have been making good money due to loosing ₹ and also dampened imports, which is also a positive factor, for improved BoP.

Source: https://timesofindia.indiatimes.com/business/india-business/explained-what-a-falling-rupee-means-for-indias-economy-and-your-finances/articleshow/92693455.cms dated 25th July, 2022. Accessed on 29.11.22

5.3.3 Hybrid Mechanism

Another model to explain the exchange rate system is crawling peg.

Crawling Peg

A 'Crawling Peg System' is a hybrid of fixed and flexible exchange rate systems. Under this system, while the value of a currency is fixed in terms of a reference currency, this peg itself keeps changing in accordance with the underlying economic fundamentals, thus letting the market forces play a role in the determination of exchange rates. There are several bases which could be used to determine the direction of changes in exchange rates. One could be the actual exchange rate ruling in the market.

In such scenarios, the market rate hovers around the exchange rate fixed officially. The divergence from the official rate will be limited.

If this market determined, exchange rate continuously shows a declining trend over a period, the peg is revised downwards, and vice versa. The changes could even be based on the balance of trade figures or changes in the external debt of the country. The advantage of a 'crawling peg' is that, though it gives a relatively stable exchange rate (changes in which are predictable), the rate is never too much out of line with the underlying fundamentals of the economy.

Bolivia, Costa Rica, Honduras, Nicaragua, Solomon Islands, Tunisia are following crawling peg m model.

Check Your Progress - 1

1. Which of the following is not true with respect to 'Currency Board System'?
   a. The country fixes the domestic currency rates in terms of foreign currency exchange rates
   b. Exchange rates are determined in terms of exchange rates between other currencies
   c. There exists a currency board to keep monetary policies in line
   d. The currency board does have the power to print unlimited amount of money
   e. The currency board offers stable exchange rates that act as an incentive for international trade and investment
2. Identify the name of the exchange rate system which comprises a group of countries agreeing to use a common currency, instead of their own countries' individual currencies.
   a. International monetary
   b. Currency board

c. Free float
d. Monetary union
e. Managed float

3. What is the name given to an exchange rate system between the countries in which the rate determined according to the demand and supply for currencies in international market?
   a. Fixed rate system
   b. Target zone arrangement
   c. Floating rate system
   d. Flexible rate system
   e. Currency peg system
4. Which of the following is true to the nature of exchange rate management in accordance with managed float system?
   a. The central bank continuously monitors to smoothen the transition from one rate to another
   b. Volatility is borne with the underlying economic fundamentals
   c. Because of the temporary effect in short and medium float, there is no intervention from central bank
   d. To minimize floating exchange rates, unofficially the rates are fixed by central bank, intervening regularly in currency market
   e. The rigidity in exchange rate increases the economic uncertainty faced by players in international markets
5. Name the exchange rate system in which the system keeps the currency value fixed in terms of reference currency and changes respective to underlying economic fundamentals.
   a. Crawling peg
   b. Clean float
   c. Managed float
   d. Fixed rate
   e. Settlement rate

5.4 History of Monetary Systems

Various variations and combinations of the above-mentioned exchange rate mechanisms have been followed in the past. Each one of them had its own unique method of correcting disequilibrium in the international monetary system.

These monetary systems along with their correction mechanisms are discussed below:

- The Gold Standard
- The Gold-Exchange Standard
- Bretton Woods System
- Post Bretton Woods System
- The European Monetary System

5.4.1 The Gold Standard

The gold standard system was followed in its classical form from 1870 to 1914. While the United Kingdom and the United States were on the gold standard from 1821 and 1834 respectively, most of the countries had joined the system by 1870. The essential feature of this system was that governments gave an unconditional guarantee to convert their paper money or fiat money[3] into gold, at a pre-fixed rate at any point of time, on demand.

This system continued for a long time across various countries because of the continued commitment of the governments to the guarantee, and the readiness of the people to believe it.

The exchange rates between two currencies were determined based on the rates at which the respective currencies could be converted into gold, i.e. the price of gold in the two countries. For example, if in the US, the price of one ounce of gold was fixed at USD 400 and in the UK, it is GBP 200, then the exchange rate (called the mint parity) between the $ and the £ would be USD 2/GBP (400/200). The exchange rate would stay at this equilibrium level because of the arbitrage[4] possibility involved. Let us assume that the prevailing exchange rate was USD 2.5/ GBP. So, a person wanting to convert Dollars into Pounds would have to pay USD 2.5 for every Pound. He/she could, instead, buy an ounce of gold in the US for USD 400 (or a fraction thereof for a proportionate price), transport it to the UK, and sell it for GBP 200. Thereby, he/she would be able to get Pounds at the exchange rate of USD 2/ GBP. As everyone would follow this route for converting Dollars into Pounds, there would be no demand for Pounds in the forex markets. Yet, the supply would remain unaffected. This demand-supply imbalance would cause the exchange rate to come down. This would keep happening till the exchange rate reaches the equilibrium level, i.e., USD 2/ GBP. An exactly opposite process would correct the exchange rate if it falls below the equilibrium level. Thus, the exchange rate would be maintained at the equilibrium level. This discussion assumes that there are no transaction costs involved in buying and selling of gold and no transportation costs for shifting it from one country to another. However, there is a cost involved in all these activities. Thus, the

[3] Fiat money is money which has insignificant intrinsic value, but a high face value due to the decree or fiat that it can be used for the settlement of all financial obligations.

[4] Arbitrage is the process of buying and selling the same product at different prices at the same time; and thus, making profits due to market inefficiencies which allow the prices in two markets to diverge.

exchange rates would be able to fluctuate between bands on either side of the equilibrium exchange rate, the bands being determined by the size of these costs. The end points of the range fixed by these bands are referred to as the gold points.

There was an in-built mechanism in the gold standard system which helped to correct any imbalances in trade that any two countries could face. For example, under this system, if France is exporting more to Germany than it is importing from it, Germany would be facing a trade deficit and France a trade surplus. This trade deficit would result in excess supply of DM (Deutsche Mark, now German Deutsche Mark (DEM)) which would drive down the DM-FFr (French Franc, presently French Euro) exchange rate below the mint-parity level. Since at this rate, the suppliers of DM would prefer to change their holdings into FFr through the 'sell DM for gold – ship it to France – sell gold for FFr' route, there would be a transfer of gold from Germany to France. When a government commits itself to convert unlimited amounts of its paper currency into gold on demand, at all points of time it would need to have enough gold with it to make sure that it does not run out of gold in case a lot of people want to go for the conversion simultaneously. In case a country does run out of gold, its credibility would be shattered and the whole system would collapse. To avoid such a situation, a gold reserve equal to a fixed percentage (which may even be up to 100 percent) of the circulating currency is required to be maintained. With gold moving away from Germany, its gold reserves would come down and hence it would be forced to reduce the money supply. On the other hand, the gold reserves in France would go up and its money supply would increase. According to the Quantity Theory of Money, change in the price level is directly proportional to change in the money supply. With an increase in the money supply, more money would chase the same amount of goods. Hence, the prices of those goods increase, and vice versa. With an increase in the money supply in France, the price of goods produced in France also increases. At the same time, there is a reduction in the money supply in Germany, and the prices of German goods decrease. This reduces the competitiveness of French goods vis-à-vis German goods, and the former become less attractive to both German as well as French consumers. This results in a reduction in exports from France and an increase in imports from Germany. This process continues till trade balance between the two countries is achieved. This process of correction of imbalances in international receipts and payments is known as the *price-specie-flow* mechanism.

Countries continued to be on the gold standard for a long-time due to its inherent advantages. Most of the advantages arose due to the discipline enforced by the price stability of gold. The price of gold (its purchasing power) generally moved in line with the price of other goods and services, facing the same inflation rate. Gold being a commodity money (i.e., needing the use of other goods and services to be located, mined, and minted), its cost of production also moved in line with the general inflation rate. This caused the cost of production and the purchasing

power of gold to tend towards equality eventually. The government needed to acquire additional gold before it could issue more money. As the cost of acquiring gold was equal to the value of the additional money that could be issued, the government had no incentive to finance its deficits by digging additional gold and printing more money. This led to fiscal discipline on the part of the government and protected the economy from inflation resulting from excessive government spending. It also ensured price stability in the participating countries. The second advantage of the gold standard system lays in the fact that exchange rates movements were quite predictable. Overall, the exchange rates would change only if a country changed the price of its currency in terms of gold. A country experiencing an increase in gold reserves would be likely to lower the price of gold, while those experiencing an exodus of reserves would be likely to increase it. This predictability of exchange rate movements reduced the risks involved in international trade and investments, and thus made the process of allocation of world resources more efficient.

The gold standard system however was abandoned with the advent of the World War I, in 1914.

5.4.2 The Gold-Exchange Standard (The Inter-War Period)

During the World War I, Britain and other countries borrowed heavily from the US to pay for food and arms. Britain also sold a lot of its foreign assets for the same purpose. Meanwhile, the British industry was losing its competitive edge in the international markets. After the sale of its foreign assets, the earnings from those assets which earlier used to offset a part of its trade deficit were also lost. The War ended in 1918, after which exchange rates could remain 'float' for a few years. Large reparations (compensation payable by a defeated nation for damages caused during war) were forced upon Germany. In the US, industries which had expanded during the war were apprehensive of facing competition from foreign firms. Many countries were facing high inflation. All these factors contributed to a change in the attitude of countries towards free trade and trade barriers were imposed by many of them. The imposition of trade barriers by the US worsened the situation as its debtor countries found it difficult to earn dollars, and hence, repay its dollar loans.

In 1925, Britain returned to a modified version of the gold standard at the pre-war parity. Many other countries also returned to the modified standard at around the same time. International trade was being constrained by the limited gold available for backing the corresponding payments. The need was felt for creation of additional liquidity in the international markets. Hence, under the new system called the gold-exchange standard, some of the countries committed themselves to convert their currencies into the currency of another country on the gold standard, rather than into gold. Instead of holding gold as a reserve asset, they started holding reserves of that currency. Though for most of the countries this

reserve currency was the pound, due to the growing importance of France and the US, some countries made their currencies convertible into euro and the dollar. This gave a special status to these countries namely Britain, France, and the US.

Due to the increasing demand for pound, French francs and US dollars, these countries could create money, while other countries had to reduce their gold reserves or pound reserves to pay for their imports.

For example, Britain could transfer pounds by creating a sterling liability owed to the other country. It thus acted as a banker to the world. Though this system provided the additional liquidity required, the methodology followed for creating the liquidity itself sowed the seeds for failure of the system.

The economic situation had changed drastically since the abandonment of the system in 1914, the gold parity turned out to be overvalued. Another important change that had taken place since 1914 was that the costs and prices had lost the flexibility they enjoyed earlier, due to increased unionism being witnessed. For the automatic correction mechanism to work properly, flexibility of these factors was an essential pre-requisite. This made it difficult for Britain to maintain the exchange rates. One drawback of the system was that while the correction mechanism worked eventually, in the short run it ended up increasing the interest rates in the economy facing the trade deficit. This used to provide a cushion by means of increased capital inflows (which would come in to reap the benefit of a higher rate of interest than could be earned in other countries), which used to offset the trade deficit to some extent. In the absence of flexibility of prices and costs, the increase in interest rates became permanent. This affected the British industry badly and the country started facing deflation, which increased the unemployment levels.

Another drawback of the system was that though the prices were stable eventually, there were alternate periods of inflation and deflation in the short run. The deflationary periods would expose the countries to increasing unemployment levels – a phase that various countries were going through during that period, and something they could ill-afford at that time. As a result, the countries found it beneficial in the short run not to let the correction mechanism work and to indulge in sterilization. Thus, protecting their domestic economic activity from external disturbances. Sterilization, or neutralization, is the policy of not letting a change in the reserves to have any effect on the money supply. This may be done either by directly breaking the link between the reserves and the notes printed, or by increasing or reducing the ability of banks to create money.

The final blow came in the form of the Great Depression of the late 1920s and early 1930s that started in the US, and later spread to other parts of the world. The effect of the US increasing its interest rates and trying to deflate its economy was devastating for other countries. While capital started flowing from Britain to the

US (instead of towards Britain), other economies dependent on exports to the US found their incomes falling drastically due to a combined effect of the trade barriers put up by the US along with a reduced US demand. These countries witnessed falling employment and consumption levels thus getting into the vicious circle of low employment, low earnings, low demand and still lower employment. All this was happening in a period when the unemployment levels were worrying the countries more than the worsening current-account balances.

As mentioned earlier, under the new system, some currencies were convertible into FFr (French Franc now Euro) or the dollar. But these countries did not have enough gold reserves to back their commitments. Although Britain was acting as the banker to the world, its gold reserves however were not enough to back the financial obligations it was creating on itself. In addition, unlike a normal bank, it did not have any 'lender of last resort'. As Germany defaulted on its payment obligations in the absence of any lenders (the US markets having dried up in the wake of the depression), the confidence in the monetary system started eroding. France started converting its pound holdings into gold to shore up its gold reserves and prepare itself for any eventuality. As a result, Britain's gold reserves started depleting rapidly. Around the same time, a major Austrian bank – Creditanstalt collapsed. This event, together with Britain's depleting reserves, spread a financial panic around the world as Britain's ability to honor its commitment became doubtful. Soon, everyone started trying to convert their Pound holdings into gold. Britain being unable to fulfill its commitment, abandoned the system in 1931 to save its economy from disaster.

With Britain's departure from the system, the pressure shifted to the dollar, which was the only remaining currency convertible into gold. This pressure eventually resulted in the US suspending the convertibility in 1933. With this, the gold-exchange standard effectively ended. A few countries had already left the gold standard after the depression started in 1929. Some more followed after Britain's departure from the system. These countries floated their currencies and imposed trade and capital controls to avoid a huge depreciation in their currency's value and to insulate themselves from external factors. Even the countries that remained on the gold-exchange standard had to impose trade controls and follow deflationary policies in order not to lose gold. As most of the countries were facing an economic downturn and needed external demand to boost the domestic economy, a series of competitive devaluations (where every country tries to devalue its currency more than the other countries', to boost its exports – also called beggar-thy-neighbor policy) started taking place. Due to the extreme volatility of exchange rates and the restrictions imposed on trade and capital flows, international trade came down to very low levels and international capital flows almost stopped.

Activity 5.1

Gold standard monetary system implies country's currency to be directly linked to gold. Do a comparative analysis and assess the disequilibrium that affected the monetary system before and after the advent of the World War I.

Answer:

5.4.3 Bretton Woods System

The World War II effectively stopped all international economic activity. Global economic growth was severely affected. On the one hand, the warring nations suffered huge damages because of the war, and on the other hand, most of the countries were suffering from hyper-inflation. The continuing war also made any co-operation on the economic front impossible. In this scenario, the need was felt for an economic system which would again make international trade and investments possible. For this, a system of stable exchange rates was required, which would also ensure that the countries do not get any incentive by following inflationary policies. Also required, was some arrangement which would help countries to tide over their short-term balance of payments problems and help them remain within the system without causing undue turmoil in their economies.

In 1944, representatives of 44 countries met in Bretton Woods, New Hampshire, USA. They signed an agreement to establish a new monetary system which would address all these needs. This system came to be known as the Bretton Woods System.

The main terms of the agreement arrived at were as follows:

Two new institutions were to be established, namely, the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (IBRD, also called the World Bank). IMF was supposed to be more important and powerful than the World Bank. It was decided that the member countries would meet under the aegis of this institution and together take a decision on any important issue which might affect the world trade or the world monetary system. Hence, co-operation and mutual consultation was built into the system to avoid ill-effects of any universally harmful policies as followed by most of the countries before the World War II. The second most important function of these institutions was to provide funds to member-countries to help them tide over temporary balance-of-payments deficit. These institutions and their functions are explained in detail later.

A system (which came to be known as the adjustable peg system) was established which fixed the exchange rates, with a provision to change them if necessity arose. Under the new system, all the members of the newly set-up IMF were to fix the par value of their currency either in terms of gold, or in terms of the US dollar. The par value of the US dollar, in turn, was fixed at USD 35 per ounce. All these values were fixed with the approval of the IMF, and reflected the changed economic and financial scenario in each of the countries and their new positions in international trade. Further, the member countries agreed to maintain the exchange rates for their currency within a band of one percent on either side of the fixed par value. The extreme points of these bands were to be referred to as the *upper* and the *lower support points,* due to the requirement that the countries should not allow the exchange rate to go beyond these points. The monetary authorities were to stand ready to buy or sell their currencies in exchange for the US dollar at these points, and thereby support the exchange rates. For this purpose, a country which would freely buy and sell gold at the par value for the settlement of international transactions was deemed to be maintaining its exchange rates within the one percent band. Thus, the US, which was the only country fulfilling this condition, was not required to intervene in the forex markets.

Currencies were required to be convertible for trade-related and other current-account transactions, though governments were given the power to regulate capital flows. This was done in the belief that capital flows destabilize economies. For such conversion, gold reserves needed to be maintained by the US, and dollar reserves by other countries. As selling the local currency would result in an increase in the dollar reserves and buying it would result in a reduction in the reserves, countries facing a downward pressure (which would inevitably be the ones facing a balance-of-payments deficit, as explained later) were under more pressure than countries facing an upward pressure on its currency (the ones enjoying a balance-of-payments surplus). The additional pressure existed because the deficit country could eventually run out of reserves, and hence needed to follow more prudent economic, monetary, and fiscal policies, while the surplus countries would only face an accretion of reserves. This imbalance in the responsibilities imposed on the two sets of countries eventually led to the downfall of the system.

Since there was a possibility of determination of such exchange rates being incompatible with a country's BoP position, the countries could revise the exchange rates up to 10% of the initially determined rate, within one year of the rates being determined.

After that period, a member country could change the original par values up to five percent (on either side) without referring the matter to IMF, that too only if its financial and economic conditions made it essential. A bigger change could be brought about only with the consent of IMF's executive board, which would allow it only in case of a "fundamental disequilibrium" in its balance-of-payments.

Continuous reduction in reserves was supposed to serve as an indication of a fundamental disequilibrium.

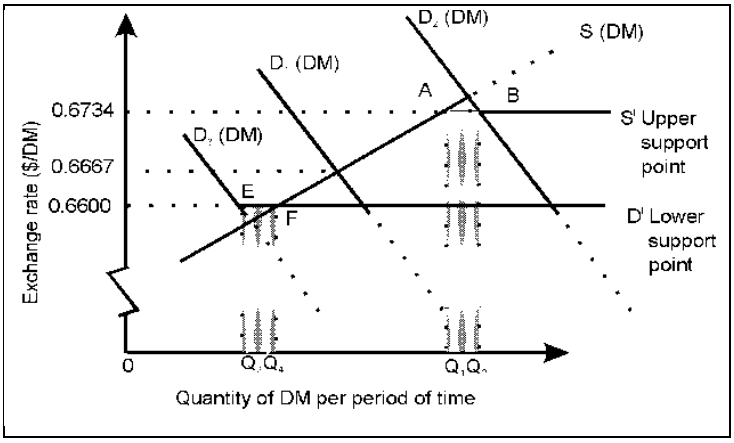
All the member countries were required to subscribe to IMF's capital. The subscription was to be in the form of gold (one-fourth of the subscription) and its own currency (the balance). Each country's quota in IMF's capital was to be decided in accordance with its position in the world economy. This capital was needed to enable IMF to help the countries in need of reserves for defending their currency.

The Mechanism

The process for maintenance of the exchange rates under the Bretton Woods System shall be now explained. Let us take the example of the Deutsche Mark and the US Dollar. Let us assume that the parity exchange rate between these currencies was fixed at 2.2 DM per Dollar or USD 0.458/DM. The exchange rate would have to be maintained between DM 2.215 / USD and DM 2.185 / USD. These support points can also be written as USD 0.451 / DM (1/2.215) and USD 0.458 / DM (1/2.185).

The demand and supply curves for the DM under the gold-exchange standard is shown in Figure 5.2.

Figure 5.2: Demand and Supply Curves under the Bretton Woods System



Source: ICFAI Research Center

Let the market demand for DM be shown by D_1 (DM) and the supply by S(DM). The equilibrium at which these curves intersect is initially the same as the parity, i.e., DM 2.2 / USD or USD 0.455 / DM. The demand for DM comes mainly from importers of German goods who need to pay for them in marks, and from investors who wish to invest in Germany and need marks for such investment. The demand curve for marks follows the normal shape of a commodity demand curve. As the price for marks (its exchange rate with dollars) goes up, its demand goes down. The supply of marks comes mainly from German importers who need other currencies to pay for their imports and use marks to buy them. It also comes from German investors who need other currencies to be able to invest in them.

The supply curve for marks also conforms to the normal commodity supply curve's shape. As the price of marks goes up, its supply increases. A reduction in the price of a currency in terms of another currency is termed as depreciation in the exchange rate. An increase in its price is called an appreciation. Thus, the demand for a currency goes up when it depreciates, and the supply goes up when it appreciates.

Let us suppose there is a sudden increase in the demand for German goods. This would result in an increase in the demand for DM and the demand curve would shift to the right. Let the new demand curve be D_2(DM). As can be seen from the illustration, the new equilibrium exchange rate lies beyond the upper support point. At this rate, the German central bank, i.e. the Bundesbank must intervene in the forex market and should supply adequate amount of DM to maintain the exchange rate at the upper support point. As the market supply must be supplemented by government action irrespective of the size of the deficiency, under the gold-exchange standard the supply curve becomes perfectly elastic at the upper support point. Since at this exchange rate, the private supply of DM would be equal to only Q_1, the rest of the demand for DM (= $Q_2 - Q_1$) would have to be supplied by the monetary authorities. As the Bundesbank supplies $Q_2 - Q_1$marks, in exchange it ends up buying ($Q_2 - Q_1$) x 0.458 US dollars. This is reflected in the shaded area ABQ_1Q_2. Hence, there is an accretion to Bundesbank's dollar reserves in case of an appreciation of the domestic currency beyond the upper support point.

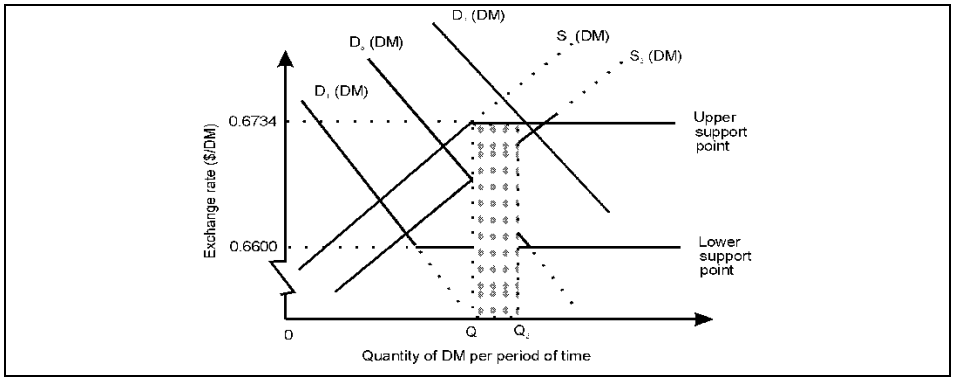
If the demand for DM falls from the original equilibrium due to any reason, the demand curve shifts to the left [to D_3(DM) in our illustration]. If the resultant exchange rate falls below the lower support level, the Bundesbank would again have to intervene and sell dollars for marks, thus making up the deficiency in the DM demand. Again, since the deficiency must be made up by the authorities, however huge it may be, the demand curve becomes perfectly inelastic at the lower support level. At this exchange rate, the monetary authorities would have to demand $Q_4 - Q_3$ marks. In exchange for these marks, it would need to supply 0.451 x ($Q_4 - Q_3$) dollars. This is shown by the shaded area EFQ_3Q_4. Hence, a depreciation of the domestic currency beyond the lower support point causes a depletion of reserves.

Price Adjustment Mechanism

Intervention by monetary authorities under the Bretton Woods system was not an end, but a means to correct the imbalance underlying the movement of the exchange rate beyond the support points. Figure 5.3 explains how this correction was supposed to take place. We, initially, start with the demand and supply curves derived in Figure 5.2, which become inelastic at the lower and the upper support point respectively. As before, the demand for DM increases to D_2(DM), due to which the exchange rate goes beyond the upper support point. This forces the

Bundesbank to intervene by demanding dollars. As the dollars must be paid for in marks, it increases the supply of marks in the German economy. Once again, according to the quantitative theory of money, the increase in money supply increases the prices of German goods, and hence, makes them less competitive in both international and domestic markets. This increases the demand for imported goods in Germany and reduces the demand for German exports. The decreased demand for German exports reduces the demand for DM and shifts the demand curve to D_3(DM). At the same time, the increased demand for imports in Germany increases the supply of DM and shifts the supply curve to S_2(DM). The new equilibrium exchange rate again falls under the permitted range, thus eliminating the need for further intervention by the monetary authorities.

Figure 5.3: Price-Adjustment Mechanisms under the Bretton Woods System



Source: ICFAI Research Center

This price-level adjustment mechanism works in the absence of sterilization. If the money supply and the local prices are not allowed to change, the mechanism cannot work. As a result, there will be a continuous increase or decrease in the dollar reserves, and eventually the parity exchange rate would have to be revised.

The Institutions

As mentioned earlier, two institutions were set up as a part of the Bretton Woods system. These institutions and their activities must be studied in detail to understand the system in totality. A few more institutions came up as a part of this system. The following institutions are discussed below:

- The International Monetary Fund (IMF)
- The International Bank for Reconstruction and Development (IBRD, also called the World Bank)
- The International Finance Corporation (IFC)
- The International Development Association (IDA)

International Monetary Fund (IMF)

The International Monetary Fund was established to ensure proper working of the international monetary system. One of the important functions of IMF was to provide reserve credit to member countries facing temporary balance-of-payments problems. For this purpose, a currency pool was maintained. Each member country was required to contribute to this pool according to its quota, which was fixed based on each country's importance in world trade. These contributions were to be partly in an international reserve currency and partly in the country's domestic currency. Initially, the first part of the payments was made in gold. Later it was replaced by SDRs (Special Drawing Rights, explained later). A country's quota would also determine its access to the pool and its voting powers at IMF. A country could draw from IMF in tranches for maintaining its currency's parity. A tranche represents 25% of a country's quota. IMF automatically approves drawings of the first tranche. A further 100% of its quota can be borrowed in four steps. With each step, stricter conditions are imposed on the borrowing country, to ensure that structural corrections are carried out. To draw from IMF, a member country has to buy reserve assets and other currencies by paying its own currency to IMF. At the time of repayment of the loan, the borrowing country reverses the deal.

IMF's management is vested in its executive board. Out of its 24 directors, six are appointed by governments holding the largest quotas. The remaining countries elect the rest of the directors. The Managing Director, who is also the Chairman of the executive board, is appointed by the executive board for five years. The board of governors, which is the highest governing body of IMF, meets once a year to take major policy decisions. Its members are generally, the finance ministers or the central bank governors of the member countries. All the member countries are represented on this board.

[5]Current IMF membership: 190 countries. India joined on December 27, 1945; Article VIII India's Total Quota: SDR 4,158.20 million. As on 2022, India does not have any outstanding loans with IMF.

IMF lends to its member countries under various schemes.

These schemes are listed below:

- **Standby Arrangement:** This scheme was introduced in 1952. Under this scheme, countries can borrow at the first indication of its possible need. This would help the country in time as it would not have to wait for IMF's approval for the loan when the need arose.

[5] Source : https://www.imf.org/en/Countries/ResRep/IND

- **Compensating Financing Facility:** This scheme was introduced in 1963 for providing financial assistance to countries facing temporary shortfall in reserves.
- **Buffer Stock Financing Facility:** Introduced in 1969, this scheme provides for countries receiving financial assistance from IMF to purchase approved primary products. This help is extended to prevent countries from suffering due to price shocks.
- **Extended Facility:** This scheme was introduced in 1974. It allows countries to borrow on a medium-term basis for overcoming balance-of-payments problems caused by structural imbalance.
- **Oil Facility:** It was introduced in 1974 and was terminated in 1976. Under this scheme, help was extended to countries most affected by the oil price rise.
- **Trust Fund:** As gold was demonetized in 1976, IMF set up this fund with the proceeds from the sale of gold held by it. This fund was used for providing special development loans on concessional terms to those 25 member-countries which had the lowest per capita income. It was discontinued in 1981.
- **Supplementary Financing Facility:** Under this scheme, established in 1977, financial assistance is provided to countries facing serious BoP problems and having high external debt.

  In 1993, other facilities were extended to the member countries for assistance in exchange rate stabilization.

[6]IMF support to its members in 2021-2022: Over the years 2021-2022, the impact of Covid pandemic and Russia's invasion of Ukraine had severe impact on many emerging economies and have faced many challenges. The IMF had worked to help the members address these challenges and keep moving forward on an increasingly difficult road to recovery.

In 2021, IMF approved a historic $650 billion allocation of the IMF's Special Drawing Rights to strengthen countries' reserves, helping to provide much-needed liquidity support to countries worldwide. Since the start of the pandemic, the IMF has approved $258 billion in new financing to 93 countries.

World Bank

The World Bank or the International Bank for Reconstruction and Development (IBRD), as its name suggests, was established to help countries in reconstructing

[6] https://www.imf.org/external/pubs/ft/ar/2022/message-from-the-md/ IMF Annual Report 2022

their economies in the post-World War II period and to help the developing countries increase their economic growth rate.

The World Bank generally makes medium and long-term loans for infrastructure projects. Lately, it has started lending to countries having BoP problems, if they are willing to adopt growth-oriented economic policies. It requires a government guarantee for making these loans. For these activities, it raises funds through subscriptions from member countries and by issuing bonds which are generally meant for private subscription.

International Finance Corporation (IFC) was incorporated in 1956 to help the development of private enterprise in different countries. It thus supplements the activities of the World Bank. IFC helps the private sector in several ways. It finances their projects through loans and subscription to equity. It provides technical assistance to private enterprises. It also tries to bring private capital and private management together by creating conditions conducive to the flow of private capital. It does not insist upon government guarantee and generally takes up more risks than its counterparts.

Example: International Finance Corporation (IFC) Finalizes one of the First Emerging Market Debt Financing Packages based on Term SOFR

IFC, which is monitoring market developments and collaborating with partners in the financial industry, has approved $25 million debt facility, to telecom infrastructure in Africa, at Term SOFR (Secured Overnight Financing Rate). The SOFR will replace USD LIBOR, as the benchmark reference rate. Henceforth, IFC will adopt SOFR, the US dollar variable rate loans for all their new offerings, in the light of the US regulator's direction, for all lending from January 1, 2022. The institution has conducted a comprehensive analysis from lending, funding, accounting, operations, information technology, and legal perspective, to act in the best interests of its clients, as reported by the IFC officials.

Source: https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=26773 dated 22nd December, 2021. Accessed on 06.07.22

[7]World Bank Group Support during the Pandemic:

The World Bank Group has mounted the largest crisis response in its history to help developing countries strengthen their pandemic response.

[7]https://www.worldbank.org/en/news/factsheet/2020/02/11/how-the-world-bank-group-is-helping-countries-with-covid-19-coronavirus Last Updated: Aug 10, 2022

From April 2020 to March 2021, the Bank Group committed over $200 billion, an unprecedented level of financial support, to public and private sector clients to fight the impacts of the pandemic. World Bank's support is tailored to the health, economic, and social shocks that countries are facing.

The World Bank had supported the developing countries with $20 billion available to finance the purchase and distribution of COVID-19 vaccines.

During the pandemic COVID-19, IFC provided $4 billion through its global health platform to increase the supply and local production of vaccines and personal protective equipment in developing countries. IFC is supporting COVID-19 vaccine manufacturing in low- and middle-income countries, especially in Africa. It has partnered with French, German, and U.S. development finance institutions on a €600 million investment in South Africa's Aspen Pharmacare, which is playing a major role producing COVID-19 treatments, therapies, and vaccines on the African continent.

IFC had deployed $8 billion in fast-track financing, with the goal of sustaining businesses, preserving jobs, and helping the private sector contribute to an inclusive, sustainable, and resilient recovery. Much of this funding has helped micro, small, and medium businesses, which are a major source of job creation in developing countries, as well as women entrepreneurs.

MIGA has launched a $6.5 billion facility to support private sector investors and lenders in tackling the pandemic. It redirects MIGA's capacity toward the urgent purchase of medical equipment, working capital for small and medium enterprises, and support for governments' short-term funding needs.

International Development Association (IDA)

While the above-mentioned agencies were set up to finance profitable projects, IDA endeavors to finance those projects in developing countries which may not be financially profitable, but indirectly may have a positive effect on the concerned economy. IDA was set up in 1960 and for obtaining membership of IDA; membership of World Bank is a prerequisite. Hence, it is usually referred to as the soft loan window of the World Bank. It provides highly concessional loans (including long-term interest-free loans) to such projects. IDA also insists on a government guarantee.

[8]IDA is a multi-issue institution, supporting a range of development activities, like primary education, basic health services, clean water and sanitation, agriculture, business climate improvements, infrastructure, and institutional reforms. These interventions pave the way toward equality, economic growth, job creation, higher incomes, and better living conditions.

IDA is also a key partner during crises and emergencies through tools like its Crisis Response Window (CRW). The CRW supported countries undergoing severe crises, such as the famine in East Africa and Yemen, support after earthquakes such as Haiti in 2010 and Nepal in 2015, and West African countries affected by the Ebola outbreak. Since its introduction in IDA16, the CRW has provided $3 billion to respond to crises and emergencies in 26 IDA countries across five regions.

IDA also helps countries manage their debt and has over the years coordinated debt relief for poor countries. Through a new debt policy called Sustainable Development Finance Policy, IDA is helping countries strengthen debt transparency, debt management, and fiscal sustainability.

All the work that IDA does is packaged in three-year policy frameworks called replenishments. The most recent replenishment of IDA's resources, the twentieth (IDA20), was finalized in December 2021, resulting in a historic $93 billion financing package for IDA countries for fiscal years 2022-2025.

Eligibility for IDA support depends first and foremost on a country's relative poverty, defined as GNI per capita below an established threshold and updated annually ($1,255 in the fiscal year 2023).

IDA also supports some countries, including several small island economies that are above the operational cut-off but lack the creditworthiness needed to borrow from the International Bank for Reconstruction and Development (IBRD). Some countries such as Nigeria and Pakistan are IDA-eligible based on per capita income levels and are also creditworthy for some IBRD borrowing. They are referred to as "blend" countries. A total of 75 countries are currently eligible to receive IDA resources.

The Failure of Bretton Woods System

Though under this system, the member countries had the option of pegging their currencies to either gold or to the dollar, the only reserve asset mentioned in the agreement establishing the system was gold. However, as the gold stocks did not increase substantially in the years following the agreement, this provision acted as an impediment to the growth of international trade. Increase in such trade required a simultaneous increase in the official reserves held by various countries,

[8] https://ida.worldbank.org/en/about/what-we-do
https://ida.worldbank.org/en/about/borrowing-countries

to facilitate the payment for these trades. To get around this problem, countries started holding dollar reserves. They generally held the reserves in the form of interest bearing securities issued by the US government. This was encouraged by the US because of the seigniorage gains involved. While the cost of printing money was almost nothing, the benefits were immense as the US could pay for its increased imports just by printing additional money, without suffering a reduction in its reserves. Seigniorage gain refers to this benefit accruing from the ability to finance unlimited imports. Since other governments were ready to hold dollar reserves and not convert them into gold, the US started following a system of fractional reserves. The total number of dollars issued by the Federal Reserve (the US central bank) was far more than the value of the gold held by it.

The consequence was that US could not convert all the dollars into gold. Other countries lost confidence on its ability and further they did not insist on the immediate conversion.

This created a paradox in the system known as the 'Triffin paradox' or the 'Triffin dilemma' after a Yale University professor, Robert Triffin, who first spoke about it in 1960. According to him, it was necessary for the US to run BoP deficit to supply the world with the additional dollar reserves needed for increased international trade. Yet, as its deficit increased and the volume of dollar reserves held by other countries grew without a simultaneous increase in US's gold reserves, its ability to honor its commitment (of converting Dollars into gold) would decrease. Such a situation would result in decreased confidence in the system, and since the system was running on the member countries' confidence, it would result in the system breaking down.

Another problem with the system was that it had become too rigid, despite the aim of the members being otherwise. As the system provided for realignment of exchange rates in case of a fundamental disequilibrium, predicting exchange rate movements became very easy. This put currencies at the mercy of private speculators. If a country started facing regular BoP deficits, people would start expecting a devaluation of its currency. Attempting to profit from such a scenario, private speculators would start selling the currency for gold or some other currency which was expected to remain strong, in the hope of buying it later at a reduced price.

As the speculators exchange the currency on hand with gold, the currency reserves will deplete, it forces the government to devalue the currency. Such outflows could be stopped by a firm commitment by the concerned government at the very beginning, of not devaluing its currency.

After making such a commitment to avoid outflows of foreign currency, though the country would find it very difficult to go for devaluation as such an act would make it lose its credibility, and the possibility of controlling the markets next time would be very bleak. The country would also not have any other choice but to

devalue, as the other adjustment mechanisms were generally not acceptable to them (which implied a contraction of the economy, thus resulting in increased unemployment), leaving them in a Catch-22 situation. A country whose currency faces an upward pressure would also face a similar problem, as the inflation resulting from an attempt to stop its currency from appreciating may not be acceptable, and the only other option left would be to revalue the currency.

In the early 50s, the US was running a BoP surplus, and hence there was a shortage of dollars in the international markets. By the late 50s, however, the US BoP situation had reversed and there was an excess supply of dollars. So much so, that there was a considerable reduction in the US's gold holdings and the general belief was that the dollar was overvalued and a correction in its value became due. This situation occurred due to two reasons. One was the devaluation of other currencies vis-à-vis the dollar in the previous decade, which made the US goods less competitive in the international markets and the other was the high inflation rate prevailing in the US economy. In 1960, the value of gold flared up in the London market where most of the private gold trading took place. This happened due to the speculation that the dollar was going to be devalued by increasing the price of gold. To prevent the markets from going too far off from the official price of USD 35 per ounce, the US arrived at a gold pool arrangement with seven other countries, under which they sold gold in London. This helped in controlling the gold prices in the short run. At around the same time, US inflation started coming down and its BoP situation started improving. By the early 60s, the US was enjoying a current account surplus. This was being balanced by capital flows out of the US, mostly on account of the US companies investing in Europe. To reduce unemployment in the US, monetary tightening was not introduced despite the overall BoP figure remaining negative. Believing that the increasing trend in the current account balance would continue and the BoP deficit was a short-term phenomenon, the government looked at short-term arrangements for tiding over the BoP difficulties. It tried to persuade foreign governments not to convert their dollar holdings into gold, opened credit lines with foreign central banks, and drew small amounts from IMF. It also entered into the General Arrangements to Borrow (GAB), an agreement with 9 other major countries to form the Group of Ten (G-10). The members of this group agreed to lend their currencies to IMF in case any one of them needed to draw a huge sum from it.

Despite all these steps, the BoP position did not turn positive as capital outflows continued. The main reason was the continuing high inflation rate in the US economy. With the US needing huge amounts of money to finance its commitments (to provide money for the reconstruction of the various war-ravaged economies) under the 'Marshall Plan' and its own expenses due to the Vietnam War, the money supply increased drastically, thus pushing inflation to high levels. The US government then started imposing various restrictions on capital flows. An 'interest equalization tax' was introduced on purchase of foreign

securities by the US citizens and its citizens were prohibited from holding gold either within the country or outside. In 1965, the US banks and companies were told to voluntarily restrict loans to foreigners, and Foreign Direct Investments respectively. In 1968, these controls were made compulsory. By then, however, the current account had also weakened that put the dollar under pressure.

Other deficit countries were also facing problems. Britain started facing a BoP deficit in the early 60s and wanted to devalue the pound. The US objected as it felt that a devaluation of the pound would fuel expectations of a dollar devaluation and speculators would start taking positions against it, forcing it to be devalued. Due to this objection from the US, the UK held on for some time, borrowing heavily from other governments and IMF to defend the pound's exchange rate. It finally gave up in 1967 and the pound was devalued. In 1968, capital started flowing out of France due to certain internal political disturbances. To stem these disturbances, the French government had to increase wages, which resulted in making the French industry less competitive. This resulted in a pressure on the value of the French franc, especially vis-à-vis the DM (now DEM). Neither France nor Germany took any action, as both wanted the other one to change the value of its currency with respect to the dollar. In 1969, the franc was finally devalued.

These problems put a lot of strain on the system. The pound devaluation did have the expected effect on the outlook for the dollar, and the pressures on that currency increased so much that even interventions by the gold pool group could not have the desired effect. In 1968, the sales by the gold pool in the private market were abandoned and the dollar was made non-convertible into gold for private market players. The Fed decided to convert only central banks' dollar holdings into gold.

After franc's devaluation, there was increased speculation, especially regarding the DM. When the German authorities could no more stop their currency from appreciating, they let it float temporarily, rather than importing US inflation via the price adjustment mechanism. This was the first break in the Bretton Woods system after 1950, in which year the Canadian dollar was allowed to float. The German authorities let the mark appreciate by 10%, at which level they re-established the peg with the US dollar.

As the system started facing these problems and the pressure on the dollar increased, a new reserve asset was created by IMF in 1967. Named SDRs (Special Drawing Rights), this international currency was allocated to the IMF member countries in proportion to their quotas. The biggest benefit of SDRs was that there would be a provision for international money to be created without any country needing to run a BoP deficit or to mine gold. Its value lay not in any backing by a currency or a real asset (like gold), but in the readiness of the IMF member countries to accept it as a new form of international money. Any member country, when facing payment imbalances arising out of BoP deficits, could draw on these

SDRs, if it maintained an average balance of 30% of its total allocations. It could then sell these SDRs to a surplus country in exchange for that country's currency, and use it for settlement of international payments. Every member country was obliged to accept upto three times its total allocations as a settlement of international payments. It is an interest-bearing source of finance, i.e. countries holding their SDRs receive interest, and the ones drawing on them pay interest. This interest rate is determined based on the average money market interest rates prevailing in France, Germany, Japan, the UK and the US. Only the member countries of IMF and specific official institutions are eligible to hold SDRs. SDR is also the unit of account for all IMF transactions.

The value of an SDR was initially determined as equal to that of dollar, i.e., one ounce of gold was equalized to 35 SDRs. Later, its value was revised and put equal to the weighted average value of 16 major currencies. Again, the basket of currencies was simplified and reduced to five currencies – US dollar, yen, pound sterling, DM, and French franc.

Both the times, the weights were based on the importance of the respective countries in world trade. Both the baskets and the weights are supposed to be revised every five years to reflect the changed scenario in international trade and the various countries' importance in it.

The IMF Board included the Chinese Renminbi (RMB) in 2015 as it met the criteria for inclusion in the SDR basket. Following this decision, the Chinese RMB joined the US dollar, euro, Japanese yen, and British pound sterling in the SDR basket. The SDR valuation review in May, 2022 updated the SDR basket as shown below.

Currency	Weights determined in the 2022 Review	Fixed Number of Units of Currency for a 5-year period Starting Aug 1, 2022
U.S. Dollar	43.38	0.57813
Euro	29.31	0.37379
Chinese Renminbi	12.28	1.0993
Japanese Yen	7.59	13.452
Pound Sterling	7.44	0.080870

Source: https://www.imf.org/en/About/Factsheets/Sheets/2023/special-drawing-rights-sdr

An important advantage of Special Drawing Rights (SDRs) is that its value is more stable than that of individual currencies. This happens because it derives its

value from many currencies, whose values are unlikely to vary in the same direction and to the same extent. This feature makes it a better unit of account than a single currency.

Despite the introduction of SDRs, the crisis continued to deepen. By this time, the US' gold holdings had reduced considerably (both as an absolute figure and as a proportion of its foreign liabilities). By 1979, its reserve position turned negative as the BoP deficit increased drastically. In the first three months of 1971, huge pressure built up against the dollar, especially with respect to the mark. Several countries had to buy excess dollars to defend their exchange rates. Germany, not intending to increase its money supply to unmanageable proportions, once again floated its currency. In April 1971, the US suffered a trade deficit for the first time, but it could not follow contractionary policies as it was simultaneously suffering from high unemployment. The only option left was to devalue. Even that it could not do on its own, as increasing the price of gold in terms of the dollar would not have had the desired effect due to other currencies being pegged to the dollar directly (rather than through gold prices). Also, an unexpected devaluation of the dollar would have penalized those countries which were trying to help the US by holding on to dollars instead of converting them into gold. Most of the countries held on to dollars in the first half of 1971. In the beginning of August, France needed gold to repurchase francs from the IMF, which it had sold earlier during harder times. It fulfilled this need by converting its dollar holdings into gold. As gold reserves of the US fell and rumors spread about Britain also trying to follow the same route as France, panic spread in the international markets about the US' ability to honor its commitment to convert all dollar holdings into gold. This caused a run on its gold reserves as all countries rushed to get their dollar holdings converted when they could. This precipitated the matters so much that the US decided to stop converting dollars into gold and let its currency float on August 15, 1971. To improve its BoP position, it simultaneously imposed an additional 10% tariff on imports. Hence, the two most important pillars of the system were gone – fixing of prices of currencies in terms of gold and their convertibility into gold. As a reaction to this development, many countries let their currencies float.

Consequently, the US intended not to shift from a pegged-exchange rate system to a floating rate system, but to seek a realignment of exchange rates. Therefore, it called for a meeting of the 10 largest IMF member countries, which was held in December 1971, at the Smithsonian Institute in Washington, and considered the issue of realignment. As a part of the agreement arrived at in that meeting, which came to be known as the Smithsonian agreement, many of the countries revalued their currencies in terms of the dollar, while the dollar was devalued by raising the price of gold from USD 35 to USD 38 per ounce. The other part of the system, i.e., the facility of conversion of dollars into gold, however, was not re-

established. The band around the parity rates was increased from one percent to 2.25 percent on each side, thus providing the central banks more flexibility in the management of exchange rate and monetary policy. It was also agreed to liberalize trade policies and to introduce more flexibility to exchange rates.

When the demand curve for exports is relatively inelastic, a devaluation of a country's currency does not immediately lead to an improvement in its current-account balance. In the initial period, a reduction in the price of exports is much more than an increase in the volumes, and hence, there is a net reduction in exports. Eventually, however, the volumes pick up and the net exports start rising. The current-account curve, thus, traces a J-shape. It first becomes worse than its position before the devaluation, and then improves. This is called the J-curve effect. The US' BoP behaved in a similar manner after the Smithsonian agreement. It was misinterpreted to mean that the devaluation of the dollar was smaller than it should have been. In mid-1972, the UK floated the pound as a response to BoP problems. This again fuelled speculation against the dollar, with dollar being abandoned in favor of mark and yen. In February 1973, the dollar came under extreme selling pressure due to these factors and also due to the high inflation rate which continued to reign in the US. It was contemplating devaluing the dollar once again, but was pre-empted by Switzerland which floated its currency. The dollar was, nevertheless, devalued by raising the price of gold to USD 41.22 per ounce. In mid-March, 14 major industrial countries followed Switzerland by abandoning the system and floating their currencies. With this, the system ended.

Check Your Progress - 2

6. Identify the monetary system that got abandoned with the advent of World War I in 1914.
   a. Gold standard
   b. Gold-exchange standard
   c. Bretton Woods system
   d. Post Bretton Woods system
   e. European monetary system
7. In which of the following years, was a worldwide economic Great Depression experienced by the industrialized Western World?
   a. 1929-1939
   b. 1986-2003
   c. 1999-2002
   d. 2007-2009
   e. 2008-2012

8. Identify the agreement terms that is not true to the implementation of the emergence of Bretton Woods System.
    a. Two new institutions were to be established, namely, (IMF) and IBRD, also called the World Bank
    b. Adjustable peg system was established which fixed the exchange rates, with the provision of changing them if the necessity arose
    c. Countries could revise the exchange rate up to 10% of the initially determined rate, within one year of the rates being determined
    d. All the member countries were required to subscribe to IMF's capital
    e. Currencies were required to be non-convertible for trade-related and other current-account transactions
9. Which of the following international organization would provide reserve credit to member countries facing temporary balance-of-payments problems?
    a. The International Monetary Fund (IMF)
    b. The International Bank for Reconstruction and Development (IBRD)
    c. The International Finance Corporation (IFC)
    d. The International Development Association (IDA)
    e. The International Investment Fund Association (IIFA)
10. Which of the following financing schemes enables member countries of IMF to borrow at the first indication of its possible need?
    a. Standby arrangement
    b. Compensating financing facility
    c. Buffer stock financing facility
    d. Extended facility
    e. Supplementary financing facility

5.4.4 Post-Bretton Woods System (The Current System)

With the abandonment of the Bretton Woods system, most countries shifted to floating exchange rates. This fact was finally recognized by the IMF and the articles were amended in its agreement. The amendment was decided upon in Jamaica in 1976 and became effective on April 1, 1978. This was the second amendment to IMF's articles. Under the new articles, countries were given much more flexibility in choosing the exchange rate system they wanted to follow and in managing the resultant exchange rates. They could either float or peg their currencies. The peg could be with a currency, with a basket of currencies or with SDRs. The only restriction was that the pegging should not be done with gold and the member countries were also not allowed to fix an official price for gold. This was done to reduce the role of gold and to make SDRs more popular as a reserve

asset. For the same reason, the value of an SDR was redefined in terms of a basket of currency (to make it more stable and hence preferable as a reserve asset), rather than in Dollar terms. Further, the members were no longer required to deposit a part of their quota in gold, and IMF sold off its existing gold reserves. In order to make SDRs more attractive as a reserve asset, they were made interest-bearing. They were also allowed to be used for different types of international transactions. The member countries were also left free to decide upon the degree of intervention required in the forex markets, and could hence make it compatible with their economic policies. Secondly, IMF was given increased responsibility for supervising the monetary system. As a part of these increased responsibilities, IMF was required to identify those countries which were causing such changes in the exchange rates through their domestic economic policies, which proved disruptive to international trade and investment. It could then suggest alternative economic policies to these countries. IMF was also responsible for identifying any country which was trying to defend an exchange rate that was inconsistent with the underlying economic fundamentals. This was to be done by a constant monitoring of the reserves position of various countries. Lastly, the new articles made it easier for countries facing short-term imbalances in their BoP accounts to access IMF's assistance.

While countries were free to determine their exchange rate policies, under Article IV of the agreement, they were required to ensure that the economic and financial policies followed by them were such as to foster 'orderly economic growth and reasonable price stability'. They also had to follow principles of exchange rate management, adopted by IMF in April 1977. According to these principles:

- A member country should neither manipulate the exchange rates in such a way as to prevent a correction in the BoP position, nor should it use the exchange rates to gain competitive advantage in the international markets.
- A member country was required to prevent short-term movements in the exchange rates which could prove disruptive to international transactions, by intervening in the exchange markets.
- While intervening in the forex markets, a member country was required to consider other countries' interests, in particular in the currency of the country in which it chooses to intervene.

These principles attempted to bring some stability in the forex markets and to prevent another bout of competitive devaluations.

Given the freedom, different countries chose different exchange rate mechanisms. While a few kept their currencies floating, a few others pegged their currencies either to a single currency or to a basket of currencies. A peg was maintained by intervention in the foreign exchange markets and by regulating forex transactions.

A lot of volatility has since been experienced though floating of currencies was expected to make the exchange rate movements smoother. To remove a part of

this volatility, a group of nations come together occasionally to form closer economic ties by co-operating with each other in the management of their exchange rates. One such group formed was the European Monetary Union (EMU) in the year 1992.

Activity 5.2 Bring out the congruent measures, standards, and principles of Bretton Woods system. **Answer:**

5.4.5 The European Monetary System[9]

An economic and monetary union (EMU) was a recurring ambition for the European Union from the late 1960s onwards. EMU involves coordinating economic and fiscal policies, a common monetary policy, and a common currency, the euro. A single currency was preferred since it makes it easier for companies to conduct cross-border trade, the economy becomes more stable, and consumers have more choice and opportunities.

However, a variety of political and economic obstacles barred the way: weak political commitment, divisions over economic priorities, and turbulence in international markets. These all played their role in frustrating progress towards the Economic and Monetary Union.

The international currency stability that reigned in the immediate post-war period did not last. Turmoil in international currency markets threatened the common price system of the common agricultural policy, a main pillar of what was then the European Economic Community. Later attempts to achieve stable exchange rates were hit by oil crises and other shocks until, in 1979, the European Monetary System (EMS) was launched.

The EMS was built on a system of exchange rates used to keep participating currencies within a narrow band. This completely new approach represented an unprecedented coordination of monetary policies between EU countries, and operated successfully for over a decade. However, it was under the presidency of Jacques Delors when central bank governors of the EU countries produced the 'Delors Report' on how EMU could be achieved.

The Delors Report proposed a three-stage preparatory period for economic and monetary union and the euro area, spanning the period 1990 to 1999. European

[9] https://european-union.europa.eu/institutions-law-budget/euro/history-and-purpose_en

leaders accepted the recommendations in the Delors Report. The new Treaty on European Union, which contained the provisions needed to implement the monetary union, was agreed at the European Council held at Maastricht, the Netherlands, in December 1991.

After a decade of preparations, the euro was launched on 1st January, 1999: for the first three years it was an 'invisible' currency, only used for accounting purposes and electronic payments. Coins and banknotes were launched on 1st January, 2002, and in 12 EU countries the biggest cash changeover in history took place.

Initially, only 11 countries joined the EMU as its members. Over time, more and more countries decided to join. The total number of member countries as on January, 2023 is 27 (Table 5.2).

[10]Table 5.2: European Union – Member States

S. No	Member Country	Capital	Member Since
1.	Austria	Vienna	1st January 1995
2.	Belgium	Brussels	1st January 1958
3.	Bulgaria	Sofia	1st January 2007
4.	Croatia	Zagreb	1st July 2013
5.	Cyprus	Nicosia	1st May 2004
6.	Czech Republic	Prague	1st May 2004
7.	Denmark	Copenhagen	1st January 1973
8.	Estonia	Tallinn	1st May 2004
9.	Finland	Helsinki	1st January 1995
10.	France	Paris	1st January 1958
11.	Germany	Berlin	1st January 1958
12.	Greece	Athens	1st January 1981
13.	Hungary	Budapest	1st May 2004
14.	Ireland	Dublin	1st January 1973
15.	Italy	Rome	1st January 1958
16.	Latvia	Riga	1st May 2004
17.	Lithuania	Vilnius	1st May 2004
18.	Luxembourg	Luxembourg	1st January 1958
19.	Malta	Valleta	1st May 2004
20.	Netherlands	Amsterdam	1st January 1958
21.	Poland	Warsaw	1st May 2004
22.	Portugal	Lisbon	1st January 1986
23.	Romania	Bucharest	1st January 2007
24.	Slovakia	Bratislava	1st May 2004
25.	Slovenia	Ljubljana	1st May 2004
26.	Spain	Madrid	1st January 1986
27.	Sweden	Stockholm	1st January 1995

Source: EU member countries, Jan 2023 https://european-union.europa.eu/principles-countries-history/country-profiles_en?page=1

[10] https://europa.eu/european-union/about-eu/countries/member-countries_en

On March 29, 2017, the United Kingdom (UK) formally notified to the European Council its intention to leave the European Union popularly known as BREXIT.

The member countries, which trade their currencies in for the Euro are: Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, and Greece. Overseas territories of some Eurozone countries, such as French Guiana, Réunion, Saint-Pierre, etc., Miquelon, and Martinique, also use the Euro. These countries together are frequently referred to as the "Eurozone", "Euroland" or more rarely as "Eurogroup". The Euro (€) is the official currency of 20 out of 27 EU member countries. The member countries using the Euro include Austria, Belgium, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Slovakia and Spain.

The following gives a brief evaluation on the uncertainty and protectionist tendencies that could undermine the global economy. That is due to the 'British Exit' from European Union (EU) as opined by the international organizations in the prevailing years.

[11]BREXIT Implications on Global Economy

Jim Yong Kim, president of the World Bank (Washington-based organization), had said that a tentative pickup in the global economy in 2017 is at risk from the political uncertainty unleashed by Brexit. It quoted that the year 2016 had been the weakest year for the global economy since the deep recession of 2008-09. It had expressed concerns that protectionist pressures would continue to increase unless the pace of activity is picked up.

The Bank's findings on its annual Global Economic Prospects (GEP), supposed that global growth had failed to meet its forecast every year since 2011.A sluggish performance by the United States and the recessions in large commodity dependent economies had kept expansion in the world economy to 2.3%, down from 2.7% in 2015. This heightened level of policy uncertainty, especially regarding trade, has been aggravated by recent political developments, most notably in the USA and the UK. The other risks compounding to financial market disruptions amid tighter global financing conditions had intensified over time by mounting protectionist tendencies, slowing the potential growth and elevated vulnerabilities in some emerging markets and developing countries.

On 17th October, 2019, the EU and the UK agreed a final text of a Withdrawal Agreement, which was endorsed unanimously by the European Council. Following completion of the ratification processes in the EU and the UK, the UK left the EU on Thursday, 31st January, 2020.

[11] Adapted from Jill Treanor, Hard Brexit threatens global financial system, https://www.theguardian.com/business, 10th January 2017, Larry Elliott, Trump and Brexit put global economic growth at risk, https://www.theguardian.com/business, 10th January, 2017

5.5 Recent Developments

The interesting development in the field of monetary systems was the rise and fall of the South-East Asian economies in 1997-98. The members of the ASEAN (Association of South East Asian Nations) block, especially Indonesia, Malaysia, and Thailand built up their economies on the strength of their monetary systems. Most of the South-East Asian countries pegged their currencies to the US dollar. The fixed exchange rates helped these countries in attracting foreign capital. Their domestic interest rates and returns on other financial assets were quite high compared to the investment avenues available in the western economies. These high returns, coupled with the fixed exchange rates provided the investors a chance to earn high returns without having to bear proportionate risks. As the capital continued to flow in, the increasing trade deficit kept getting financed, putting no pressure on the exchange rates. In fact, the fixed exchange rates pulled in more foreign capital than could be profitably deployed in these economies. The result was the deployment of these funds (which were largely short-term) into property markets and long-term ventures. Since the funds were not being used to create any economic activity, the probability of their being serviced kept coming down. As the trend continued, the investors started getting worried about the serviceability of their investments. This worry turned into a panic and investors started pulling their money quickly out of these economies, everyone desiring to be the first one to get their money back safely. Since these short-term funds were put either in asset markets or in long-term investments, this action of the investors resulted in bringing the asset markets down. At the same time, the long-term investments could not be liquidated immediately to return the investors' money. The resulting defaults made the situation worse as any possibility of the local banks or companies getting any further funds faded away. This choked even the day-to-day operations of financially sound companies. The economies suffered and the pressure on their exchange rates mounted to such an extent that the countries had to give up the peg to the dollar and float their currencies. The currencies depreciated so drastically, that the whole economies 'went under' due to the effect. The stupendous growth rates turned negative, the trade deficits widened further and the investors had to bear a heavy loss. This once again reflected the pegging effect that exchange rates (without appropriate economic policies being followed) can have on a country's economy.

[12]The 'Global Financial Crisis' (GFC – 2007-09) highlighted the dimension of the risks of relying on the dollar, as the financial crisis in the United States constrained the US banks to supply cross-border credit, resulting in a sudden drying up of international dollar liquidity. Unlike in the previous crisis episodes,

[12] http://www.imf.org/en/News

the liquidity shortage stemmed from the supply side, and affected international dollar users irrespective of their credit-worthiness.

While the Federal Reserve's swapped operations with the advanced country, central banks eased the problem for these countries.[13] There was a disparity that existed between the national investment and savings, which grew still further when President Bush's tax cuts reduced US government savings. The foreign governments parked their excess savings in US assets, chiefly treasuries. This status quo had been tolerated by both sides for different reasons. Asian export-orientated economies such as China were keen to accumulate dollar reserves to smoothen international payments and boost the competitiveness of their manufactured exports by holding down their currencies against the dollar. On the contrary, the US could service its debt more cheaply than would otherwise be the case and its residents were able to live beyond their means.

The current state of the international monetary system leaves a lot to be desired. The severity in imbalances and the potential for long-term dollar devaluation cause considerable anguish to policy-makers. Nevertheless, a grand redesign like Bretton Woods is not likely to be imminent. The world has a great deal invested in the current monetary status quo and there is no clear consensus on how the current system might be replaced. Historically, it has taken a major upheaval such as a World War or the prospect of an immediate national bankruptcy to affect a transition, and it is not clear that the late financial crisis constituted enough of a jolt. 14Thereafter, between 2004 and 2015, the IMF and the World Bank jointly published the annual Global Monitoring Report (GMR), which assessed the progress towards meeting the Millennium Development Goals (MDGs). In 2015, with the replacement of the MDGs with the Sustainable Development Goals (SDGs) under the 2030 Global Development Agenda, the IMF and the World Bank have actively engaged in global efforts to support the agenda. Each institution has committed to new initiatives, within their respective remits, to support member countries in reaching their SDGs. They are also working together to better assist the joint membership, including by an enhanced support of stronger tax systems in developing countries.

5.5.1 South East Asian Crisis

[15]The 1997–98 Asian financial crisis began in Thailand and then quickly spread to neighboring economies. It began as a currency crisis when Bangkok unpegged the Thai baht from the U.S. dollar, setting off a series of currency devaluations and massive flights of capital.

Many of the South-East Asian countries pegged their currencies to the US dollar. The fixed exchange rates aided these countries in attracting more foreign capital

[13] https://www.winton.com/en/history-of-finance/history-of-modern-international-monetary-system#chapter-9
[14] http://www.imf.org/external/np/exr/facts/imfwb.htm
[15] Source: https://www.britannica.com/event/Asian-financial-crisis

than that could be profitably deployed in these economies. This led to deployment of funds into property markets and long-term ventures. As the funds were not being utilized for any real economic activity, the investors started disinvesting out of these economies. This action further resulted in bringing the asset markets down. Liquidation of long-term investments to return investor's money was also not possible. All this made daily activities of financially good companies very difficult. Thailand first witnessed failure of currency markets as the result of the government's decision to no longer peg Thai baht to the U.S. dollar. The 'Asian Contagion' spread rapidly throughout South Asia, in turn, causing the stock market to collapse, reduced export revenues and even resulted in government upheaval. The 'Asian Financial Crisis' was stemmed somewhat by financial intervention from the IMF and the World Bank. However, the chain reaction of financial market declines were also felt in the United States, Europe and Russia as the Asian economies slumped. The economies suffered badly and as a result countries gave up pegging and floated their currencies.

[16]Asia-Pacific: Vulnerable but Nothing to Worry

The ghost of 'Asian crisis' 1997 still haunted the region again in 2016 when the US Fed rate hike sent currencies depreciating against the dollar. However, these currencies also slid against other key reserve currencies of the world, an indication of capital outflows. CDS (Credit Default Swap) spreads shot up in most countries, specifically in Malaysia, Indonesia and Vietnam indicating a decline in confidence.

The Asian region was definitely vulnerable because of the rise of private debt and speculation in some real estate and equity markets. However, (in 2016), most countries in Asia had their current accounts and balance sheets in much better shape than they were before the Asian crisis in 1997. According to an IMF report in 2014, the Asian region looked better with improved fundamentals and increased flexibility of exchange rate regimes. The only downside was high indebtedness in some countries or sectors which could still trigger financial crises in countries or lead to a protracted period of slow growth, compounded by the slowdown in China.

5.5.2 Brexit – Reasons, Implications

The people of Britain voted for a 'British Exit' (BREXIT) from the EU in a referendum in June 2016. The pound fell to its lowest level (since 1985), leading to resignation of David Cameron as Prime Minister. Cameron was replaced by Theresa May who has proposed for BREXIT by March 2019 in phased manner thus ending the supremacy of EU laws on Great Britain. The Prime Minister has proposed EU free trade deal. The MPs passed the Brexit bill in Parliament which was duly signed by the Queen (after the Supreme Court upheld a High Court

[16] www.economics.rabobank.com, 2016

ruling that there must be a Parliamentary vote before triggering Article 50). Article 50 is a part of European Law that can be resorted to by any country planning to exit EU.

Reasons for BREXIT:

The following are the reasons for BREXIT:

1. The first reason for 'Brexit' was that Europe as a whole has stagnated economically over the past decade. People of Britain believed that the European Union would make Britain follow Europe's lead. However, the people never expected that Europe would throw up trade barriers against Britain.
2. The second reason for 'Brexit' is the rise of nationalism across the world. There has been a distrust among the multi-national (financial, trade, and defence) organizations which were created after World War II. People felt that these organizations were no longer serving the purpose. Further, they are taking away the control from individual nations. Hence, the best way is to come out of the 'Union'.
3. The third reason was the immigration crisis in Europe which many felt was a national issue, as it affected the internal life of the country. As EU has no specific nationalism, it could not understand the problem.

Implications of BREXIT on Economy

The UK has lost its top AAA credit rating from ratings agency S&P following the country's Brexit vote in June 2016. S&P commented that the referendum result could lead to "a deterioration of the UK's economic performance, including its large financial services sector".

For the year 2022-23, the Standard & Poor's credit rating for the United Kingdom stands at AA with negative outlook. Moody's credit rating for the United Kingdom was last set at Aa3 with negative outlook. Fitch's credit rating for the United Kingdom was last reported at AA- with negative outlook. DBRS's credit rating for the United Kingdom is AA with stable outlook. In general, a credit rating is used by sovereign wealth funds, pension funds and other investors to gauge the creditworthiness of the United Kingdom thus having a big impact on the country's borrowing costs. This page includes the government debt credit rating for the United Kingdom as reported by major credit rating agencies.

Agency	Rating	Outlook	Date
DBRS	AA	Stable	Jan 13, 2023
Moody's	Aa3	Negative	Oct 21, 2022
Fitch	AA-	Negative	Oct 05, 2022

S&P	AA	Negative	Sep 30, 2022
Fitch	AA-	Stable	Jun 18, 2021

Source: https://tradingeconomics.com/united-kingdom/rating#:~:text=Standard%20%26%20 Poor's%2 0credit%20rating %20for,at%20AA%2D%20with%20negative%20outlook.

However, the Bank of England has taken necessary steps to stop UK from slipping into recession by cutting the interest rates and other emergency steps. There is still uncertainty over the turn of events as there will be new trade agreements that the UK has to undertake with the rest of the world.

However, the expected impact can be summarized as follows:

1. Britain will be out of EU single market and the free movement of EU workers will end.
2. Foreign companies may not show interest to invest in Britain.
3. Import costs have shot up with high value of pound, but the exporters are fine with it.
4. Britain need not contribute billions of pounds to EU budget; instead, it can be used for its financial growth.
5. Britain is now free to take back control of its borders in order to curb immigration and increase security.
6. Brexit will hit the British economy, which relies on the free movement of EU migrant workers such as health professionals.

On 17th October, 2019, the EU and the UK agreed a final text of a Withdrawal Agreement, which was endorsed unanimously by the European Council. Following completion of the ratification processes in the EU and the UK, the UK left the EU on Thursday, 31st January, 2020.

Example: UK is the Fastest Recovering G20 Economy, but Post-Brexit 'Teething Problems' Slow Trade Output

The UK's economy expanded faster than any other G20 country and GDP grew by 4.8%, prior to BREXIT. However, still UK's lacklustre performance is attributed to its departure from the EU, at the end of 2019. British exports to the EU are back to pre-Brexit levels in June 2021, indicating normalising of UK-EU trade.

This helped UK manufacturing sector to rebound and manufacturers are struggling, to keep up with demand. Further, the UK is back into hiring spree, with many industries running in full swing.

Source: https://www.export.org.uk/news/580256/UK-the-fastest-recovering-G20-economy-but-post-Brexit-teething-problems-slow-trade-output.htm dated 16th September, 2021. Accessed on 06.07.22

5.6 Summary

- The experiments with various kinds of monetary systems have shown us that there is no perfect monetary system. Each system has its drawbacks as well as positive points.
- Each system involves an adjustment mechanism, which must be allowed to work and make the system last.
- The most important lesson that we learnt from the past is that the monetary system should be allowed to evolve as a response to the changing environment, while maintaining some level of stability.
- How this balance can be achieved is an open question, to which countries and supranational institutions are still trying to find an answer.
- The most significant development was the introduction of a single currency for the participants of the EMU – the Euro.
- Between January 1, 1999, and December 31, 2002, all retail transactions were settled in the national currencies. As planned, Euro notes and coins were introduced on January 1, 2002.
- The interesting development in the field of monetary systems was the rise and fall of the South-East Asian economies. The members of the ASEAN (Association of South East Asian Nations) block, especially Indonesia, Malaysia, and Thailand built up their economies on the strength of their monetary systems.
- Most of the South-East Asian countries pegged their currencies to the US dollar.
- The 'Global Financial Crisis' (GFC – 2007-09) highlighted the dimension to the risks of relying on the dollar, as the financial crisis in the United States constrained the U.S. banks to supply cross-border credit, resulting in a sudden drying up of international dollar liquidity.
- In 2015, the replacement of the Millennium Development Goals (MDGs) with the Sustainable Development Goals (SDGs) under the 2030 Global Development Agenda, the IMF and the Bank has actively engaged in global efforts to support the agenda.
- Exit of UK from Euro Zone was initiated in 2016 and the UK left the EU on Thursday, 31st January, 2020.

5.7 Glossary

Exchange Rate involves a set of rules, regulations, institutions, procedures, practices, and mechanisms which determine the rate at which this conversion takes place.

Fiat Money is money which has insignificant intrinsic value, but a high face value due to the decree or fiat that it can be used for the settlement of all financial obligations.

Fixed (or Pegged) Exchange Rate System is the value of a currency in terms of another which is fixed. These rates are determined by governments or the central banks of the respective countries.

Floating Rates are determined by the demand and supply for the currencies in the international market.

Free Floats means the exchange rates that are said to be freely floating when its movements are totally determined by the market. This system is also known as the clean float.

Hybrid (Crawling Peg) System refers to a system where the value of a currency is fixed in terms of a reference currency. The peg itself keeps changing in accordance with the underlying economic fundamentals. Thus, it allows the market forces play a role in the determination of exchange rates.

International Monetary Fund (IMF) was established to ensure proper working of the international monetary system. One of the important functions of IMF was to provide reserve credit to member countries facing temporary balance-of-payments problems.

International Monetary System calls for the movements in the exchange rates over a period.

Special Drawing Rights (SDRs) is an international monetary reserve of member countries, created and maintained by the International Monetary Fund (IMF).

Target Zone Arrangement refers to a group of countries who sometimes get together, and agree to maintain the exchange rates between their currencies within a certain band around fixed central exchange rates.

5.8 Self-Assessment Test

1. Briefly explain the nature and scope of exchange trade mechanism.
2. Explain the varied series of fixed exchange rate system.
3. “Floating exchange rates between currencies are variable that are determined by the demand and supply for the currencies in the international market”. Elucidate.
4. Distinguish between fixed exchange and floating exchange rate system.
5. Give an elaborate picture of the advantages and limitations found in gold standard and gold-exchange standard monetary mechanism.
6. How would you illustrate the cause and effect of Bretton Woods monetary mechanism that brought a drastic alteration in the international monetary system? Elucidate.

7. Describe the benefits of post Bretton Woods system in managing the resultant exchange rates.
8. "The basis of the 'European Monetary Union' was the US desire to see a united Western Europe after the World War II". Discuss.
9. Enumerate on the formulation and developmental aspects of 'European Central Bank' in introduction of a single currency system for the member states of 'European Union'.
10. Explain the present scenario, changes and developments that influence the exchange rate monetary system worldwide.

5.9 Suggested Readings / Reference Materials

1. Francis Cherunilam, International Business - Text and Cases, 6th Edition, PHI Learning.
2. P G Apte (2020), International Financial Management, McGraw Hill Education (India) Private Limited.
3. Madhu Vij (2021). International Financial Management – Text and Cases. 4th edition. Taxmann
4. Charles W. L. Hill, G. Tomas M. Hult (2021). International Business. 12th edition. McGraw Hill Education (India) Private Limited.
5. Choel S. Eun & Bruce G. Resnick (2022). International Financial Management. 8th edition. McGraw Hill Education (India) Private Limited.
6. K. Aswathappa (2020). International Business. 7th edition. McGraw Hill Education (India) Private Limited.

5.10 Answers to Check Your Progress Questions

1. (d) The currency board does have the power to print unlimited amount of money

Unlike a central bank, a currency board **does not** have the power to print unlimited amounts of money. Due to the requirement of the domestic currency being backed by reserves of anchor currency, the board can print only as much currency as can be backed by its existing reserves. This prevents the board from lending to either the government, or the domestic banks.

2. (d) Monetary Union

Under 'Monetary Union' system, a group of countries agree to use a common currency, instead of their individual currencies. This eliminates the variability of exchange rates and the attendant inefficiencies completely.

3. (c) Floating rate system

Under Floating rate system, the exchange rates between currencies are variable. These rates are determined by the demand and supply for the currencies in the international market.

4. (d) To minimize floating exchange rates, the rate is fixed by central bank unofficially, and the central bank intervenes regularly in currency market

All other statements being false, the management of exchange rates in managed float calls for third variation where, though officially the exchange rate may be floating, in reality the central bank may intervene regularly in the currency market, thus unofficially keeping it fixed.

5. (a) Crawling peg

Under the crawling peg system, the value of a currency is fixed in terms of a reference currency. This peg itself keeps changing in accordance with the underlying economic fundamentals. Thus, it lets the market forces play a role in the determination of the exchange rates.

6. (a) Gold Standard

The gold standard system was followed in its classical form from 1870 to 1914. The essential feature of this system was that governments gave an unconditional guarantee to convert their paper money or fiat money into gold, at a pre-fixed rate at any point of time, on demand. The gold standard system was abandoned with the advent of the World War I in 1914.

7. (a) 1929-1939

A worldwide economic 'Great Depression' was experienced by the industrialized western world in the period 1929-1939.

8. (e) Currencies were required to be non-convertible for trade-related and other current-account transactions, that regulate capital flows to destabilize the economies

Currencies were required to be convertible for trade-related and other current-account transactions. This is in spite of the governments given the power to regulate capital flows. This was done in the belief that capital flows destabilize economies.

9. (a) The International Monetary Fund (IMF)

The International Monetary Fund (IMF) was established to provide reserve credit to member countries facing temporary balance-of-payments problems.

10. (a) Standby arrangement

Standby arrangement was introduced in the year 1952 to enable countries to borrow at the first indication of its possible need. This would help the country in time as it would not have to wait for IMF's approval for the loan when the need arose.

Unit 6

The Foreign Exchange Market

Structure

"Don't worry about what the markets are going to do, worry about what you are going to do in response to the markets".

- Michael Carr, full-time trader, writer, and speaker with a long, illustrious career in financial services

6.1 Introduction

Forex markets are volatile and highly unpredictable. Loss and gains are common.

In the previous unit, the tremendous pace of growth of international trade and investments in the last few decades was discussed. Further, the need to have a well-functioning monetary system was also discussed. Monetary system enables a smooth flow of goods, services and capital across national boundaries. It determines the amount of payments to be made in the relevant currency, and to provide the means of settling the same. The mechanism which determines the

exchange rates between currencies was also discussed. In this unit, the settlement of these payments will be discussed.

The presence of many currencies gives rise to the need to transact in these currencies for settling international payments. In any international transactions, at least one of the parties would be dealing in a foreign currency.

Let us see what type of transactions take place in the forex market.

For example, if an Indian exporter sells some goods to a US resident and the price of the goods is denominated in dollars, the exporter would be dealing in a foreign currency.

Similarly, if an Italian resident makes an investment in the German money market, he/she would need to deal in the German Euro which would be a foreign currency to him/her. Sometimes, the currency in which the transaction is denominated may be a foreign currency to both the parties involved. For example, if a resident of Australia buys a car from a resident of Spain and the transaction is denominated in US dollar, both the parties will be dealing in a foreign currency.

As it happens for other commodities, it would be difficult for buyers and sellers of currencies to find each other. This fact resulted in the development of a market which deals specifically in currencies, called the foreign exchange market. This is an OTC (Over-The-Counter) market, i.e. there is no physical marketplace where the deals are made. Instead, it is a network of banks, brokers and dealers spread across the various financial centers of the world. These players trade in different currencies through (and are linked to each other by) telephones, faxes, computers, and other electronic networks like the SWIFT system (Society for Worldwide Interbank Financial Telecommunications). These traders generally operate through a trading room. The deals are mostly done on an oral basis, with written confirmations following later.

This unit broadly deals with forex market structure, the market players and computation of exchange rates. The unit also deals with the operational issues in the spot market and forward markets and computational aspects of various merchant transactions.

6.2 Objectives

After studying this unit, you should be able to:

- Outline the structure of the foreign exchange market
- Identify the participants involved in the foreign market transactions
- Explain the computational factors of exchange rate quotations
- Describe in detail the types of transactions in a foreign exchange market
- Discuss the process of settlement dates for the foreign exchange transactions in the market

- Give the differences between the foreign exchange market and the money market
- Briefly explain the quotes for various kinds of merchant transactions
- Discuss the structure of Indian foreign exchange market

6.3 The Structure of Foreign Exchange Market

The main players in the foreign exchange market are large commercial banks, forex brokers, large corporations, and the central banks. Central banks normally enter the market to smoothen out fluctuations in the exchange rates (as under dirty float) or to maintain fixed exchange rates.

Example: OctaFX Bags the Top Forex Broker India Award

Global Business Review Magazine selected OctaFX, a state-of-the-art trading company to over 7 million trading accounts globally, as the Best Forex Broker India 2021, in its 10th anniversary. The fintech companies in India have made a mark for themselves with appreciation from various quarters apart from achieving the success and the accolades from Global Banking and Finance Review's Best Forex Broker Asia 2021.

One of the Fintech company, OctaFX, has received as many as 40 awards, which include The 2021 'Decade of Excellence in Forex Asia', by the Global Banking and Finance Review, The 2020 'Most Transparent Broker', by Forex Awards, and The 'Best ECN Broker 2021' award, from World Finance.

The foreign exchange brokers, who form an important constituent of forex market, offer services, for bringing buyers and sellers together. Though they generally deal in most of the major currencies, they specialize in a pair of currencies and hold exhaustive information about them.

Source: https://www.business-standard.com/content/press-releases-ani/octafx-captures-2021-s-best-forex-broker-india-award-121082100406_1.html, 21st August, 2021. Accessed on 19th July, 2022

Large commercial banks deal in the market both for executing their clients' (both corporates and individuals) orders and on their own account. They act as the market makers in the forex (foreign exchange) markets, i.e., they stand ready to buy or sell various currencies at specific prices at all points of time. The commercial banks give on demand a quote for a currency against another currency; i.e., the rate at which they are ready to buy or sell the former against the latter. At these rates, they stand ready to take any side of the transaction (buy or sell) that the customer chooses. The maximum and the minimum amount of the currencies acceptable to the bank at these rates, though not specified at the time of making the quote, are generally understood according to the conventions of the market. These rates may not necessarily be applicable to amounts smaller or larger than

those acceptable according to the going conventions. In the forex markets, there are numerous market makers, and all of them would be giving different quotes for the same pair of currencies simultaneously, at any point of time. It would be very difficult for a player to keep track of all the quotes available in the market, and hence choose the one which is considered the most favorable. As a result, many trades may be taking place simultaneously at different exchange rates. The market-making activity of the commercial banks, along with speculation, makes markets extremely liquid, especially for the major currencies of the world.

The foreign exchange brokers do not actually buy or sell any currency. They do the work of bringing buyers and sellers together. Though they deal in most of the major currencies, generally they specialize in a pair of currencies and hold exhaustive information about it. Other players in the market, especially the commercial banks, approach the brokers for information about the quotes of other commercial banks. The brokers serve three important purposes in the forex markets. First is, that instead of hunting around in the market for quotes, one can approach a broker and find out these prices. Second is, that brokers help the prospective buyer or seller keep their identity secret till the deal is struck. This prevents the quote being affected by the inquirer's position, i.e., whether he/she needs to buy or to sell. Lastly, even when there is no buying or selling requirement, commercial banks can keep their quotes from going too far away from the quotes being given by other banks, by inquiring about the market quotes from the brokers.

While small corporations generally approach the commercial banks for their needs, larger corporations sometimes operate in the market on their own. They generally deal in the market to satisfy their needs arising out of their normal business operations. Yet, some big multinational companies also operate in the market to bet on the movement of the exchange rates, to make profits out of their expertise in dealing in the market.

The market in which the commercial banks deal with their customers (both individuals and corporates) is called the retail market, while that in which the banks deal with each other is called the wholesale or the interbank market. The size of the deals in the retail market is much smaller than those in the interbank market.

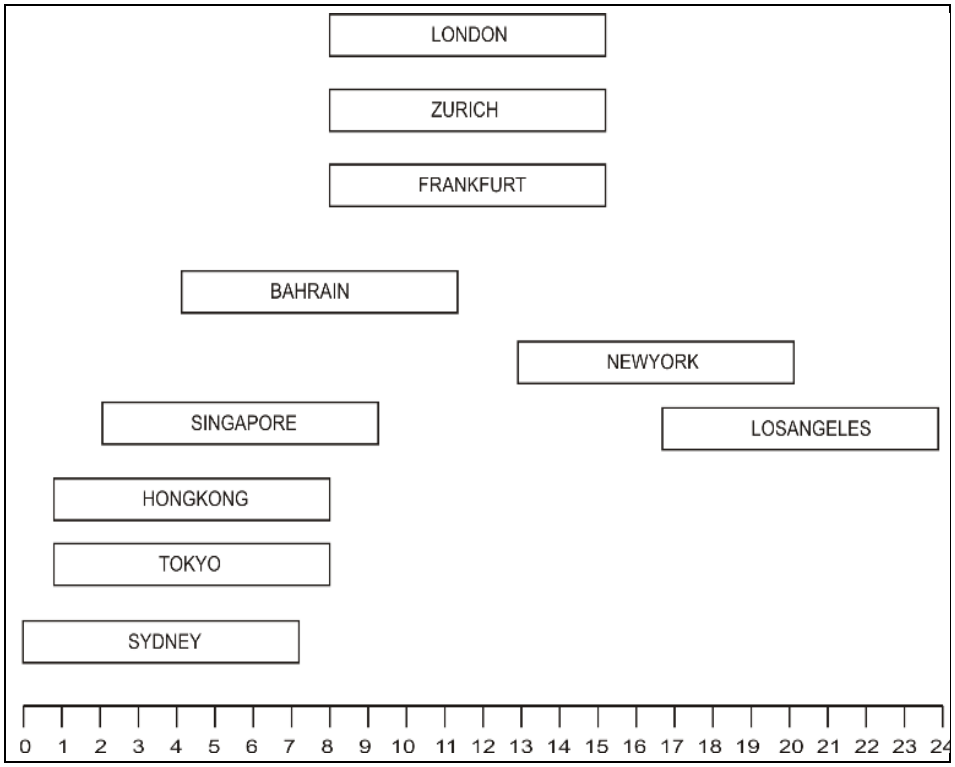
The world-wide forex market is a 24-hour market, i.e., it is open virtually all the 24-hours of a day, in at least one of the financial markets of the world. When the [17]New York market closes at 4 p.m., the Los Angeles market remains open as the corresponding time there is 1 p.m. When the Los Angeles market closes, it is opening time at Sydney and Tokyo. When Tokyo closes, the Hong Kong market is still open as it would be only 2 p.m. there. The Hong Kong and Singapore

[17] https://www.stockmarketclock.com/exchanges/nyse/trading-hours

markets prevail in the same time zone and before the close of the Singapore market, the Bahrain market opens. The closing time of the Bahrain market finds both Frankfurt and Zurich markets open, it being only 11.30 a.m.., there. London being one hour behind these two, it remains open even after Zurich markets close. Again, before the London market closes, it is opening time at New York. Out of these markets, London, New York, and Tokyo markets are the biggest ones. The effect of the market being open 24 hours a day is that the impact of any relevant event is immediately reflected on the exchange rates. Besides, it provides the facility of buying or selling a currency at any time of the day, even if the local market has closed for the day.

Figure 6.1, Table 6.1 and Figure 6.2 depict the opening and closing times of these markets w.r.t. the GMT (Greenwich Mean Time).

Figure 6.1: Working Hours of the Various Financial Markets w.r.t. the GTM (Greenwich Mean Time)



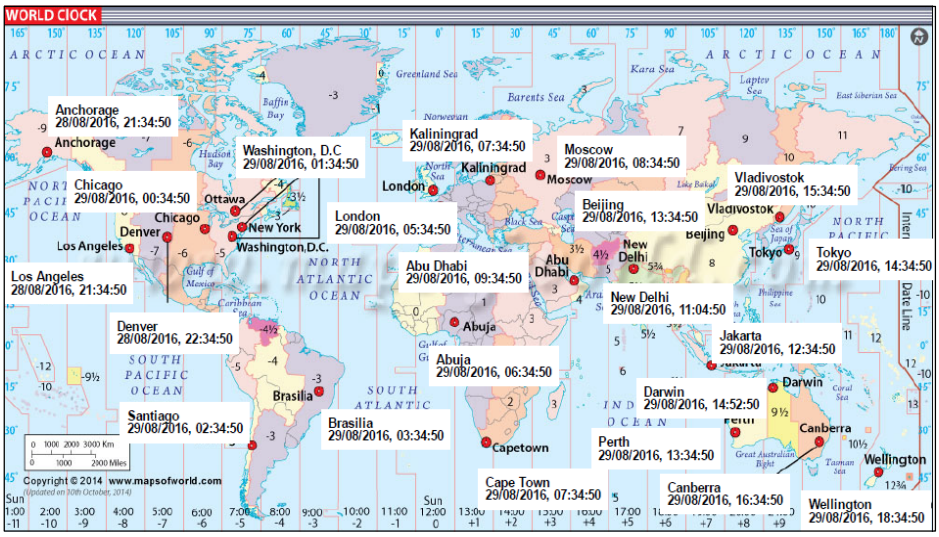
Source: https://www.stockmarketclock.com/exchanges/nyse/trading-hours

[18]**Table 6.1: World Stock Exchanges Trading Hours (24-hour format)**

Stock Exchange		Trading Hours
NYSE	New York Stock Exchange	09:30-16:00
TSE	Tokyo Stock Exchange	09:00-11:30 12:30-15:00
LSE	London Stock Exchange	08:00-16:30
HKE	Hong Kong Stock Exchange	09:30-16:00
NSE	National Stock Exchange of India	09:15-15:30
ASX	Australian Securities Exchange	10:00-16:00
FWB	Frankfurt Stock Exchange - Deutsche Börse	08:00-20:00
RTS	Russian Trading System	09:30-19:00
JSE	Johannesburg Stock Exchange	09:00-17:00
DIFX	Dubai International Financial Exchange- now NASDAQ Dubai	10:00-14:00
SSE	Shanghai Stock Exchange	09:30-11:30 13:00-15:00
NZSX	New Zealand Stock Exchange	10:00-16:45
TSX	Toronto Stock Exchange	09:30-16:00

Source: https://www.tradinghours.com/; Accessed on March 1, 2023

Figure 6.2: World Clock



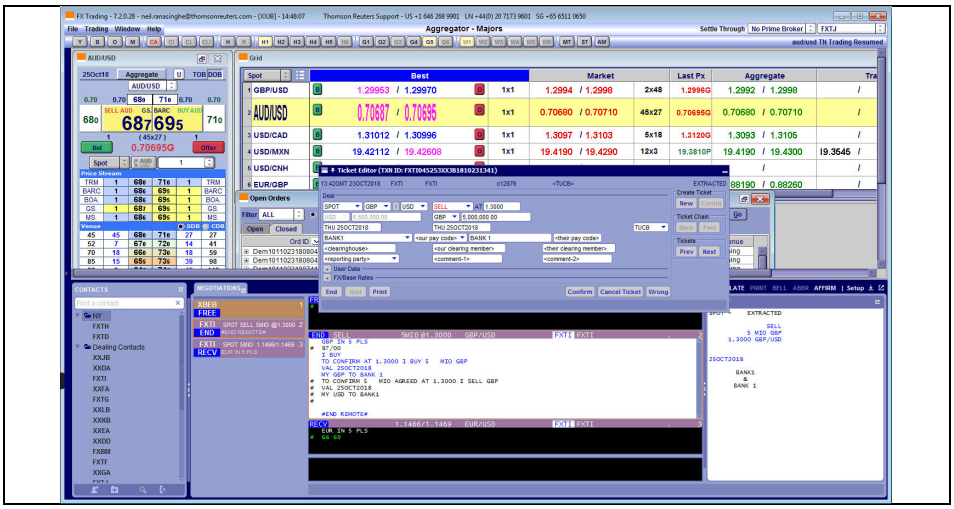
Source: http://www.mapsofworld.com/time-zone-map/world-clock-map.html

[18] https://www.stockmarketclock.com/exchanges/nyse/trading-hours

In these markets, there are a few services which report the quotes given by various players on an on-line basis. Reuters, Knight rider, and the Telerate are a few of such services. Some of these services now even offer screen-based trading, i.e., quotes are automatically matched by the system and the order executed. In 1981, Reuters launched the first conversational dealing system, Reuters Monitor Dealing Service (RMDS). A conversational dealing system allows dealers to communicate trading requirements and simultaneously send messages on screen to several other dealers. RMDS was replaced by Reuters with an upgraded version called 'Dealing 2000-0'1 in 1989.

[19]The Reuters Dealing 2000-2 system was released in 1992 and it revolutionized trading by eliminating the need for a broker. The Reuters Dealing 3000 was in place since 1999. All Reuters customers can access a new Reuters live spot price feed derived from the Reuters D3000 Spot Matching system. Reuters FX Spot View now provides the FX professional with the most comprehensive range of transactional data across 15 major currency pairs. It incorporated Microsoft Excel functionality. The Dealing 3000 system was used to trade foreign exchange, stocks, bonds, options, and commodities.

The following is the screen shot of TX trading Platform.



Source: https://www.refinitiv.com/en/products/fx-trading

The settlement of trades is completed by transfer of deposits denominated in relevant currencies between the parties involved. In the interbank market, it is normally done electronically. For example, if SBI sells dollars to the Union Bank of India in exchange for Euro the Nostro account of SBI with a bank in the US will be debited and that of Union Bank of India will be credited with the amount of the US dollars. At the same time, the Nostro account of Union Bank of India with a bank in France will be debited and that of UBI will be credited with the

[19] Source: Reuters FX Spot view Boucher

amount of the Euro. Nostro account is the overseas account held by a domestic bank with a foreign bank or with its own foreign branch, in that foreign country's currency. The same account is called a Vostro account from the holding bank's point of view. For example, a dollar account held by State Bank of India with Bank of America in New York will be SBI's Nostro account and a Vostro account from Bank of America's point of view. A currency's settlement always takes place in the country of origin of the currency. In the US, the Clearing House Interbank Payments System (CHIPS) is used for the settlement of forex transactions.

Though the exchange rate between any two currencies is determined by the overall equilibrium between their demand and supply, it is also true that there is no single equilibrium market price for a currency. Each trader tries to keep his/her quote at that level where his/her own position would be in equilibrium. A trader normally keeps a margin between the price at which he/she buys a currency and that at which he/she sells it. Thus, if the trader can match a purchase of a currency with a corresponding sale, he/she would be able to make a profit; however, it is very difficult to find matching orders of sufficient volumes for the trader to realize a substantial profit. At any point of time, the trader may find that he/she is selling more of a currency than he/she is buying, or vice-versa. This would result in the trader having a position in a currency, which exposes him to currency risk (risk of future prices moving against him/her). To avoid such net positions, the trader would have to frequently change his/her quote (to attract desired orders) so that his/her exposure would be minimized. In forex trading, minimizing the net positions alone are not enough. Since a trader's margins are very thin, volumes of trade become very important. A trader may find that though he/she is able to balance the buy and sell positions, the volume of trade coming his/her way is very low due to competitive prices quoted by other traders. A very low volume would result in miniscule profits. Hence, the trader must make sure that his/her quote always remains competitive.

According to the BIS Triennial Central Bank Survey 2022, Trading in OTC FX markets reached $7.5 trillion per day in April 2022 ("net-net" basis, all FX instruments), up 14% from $6.6 trillion three years earlier i.e. April 2019.

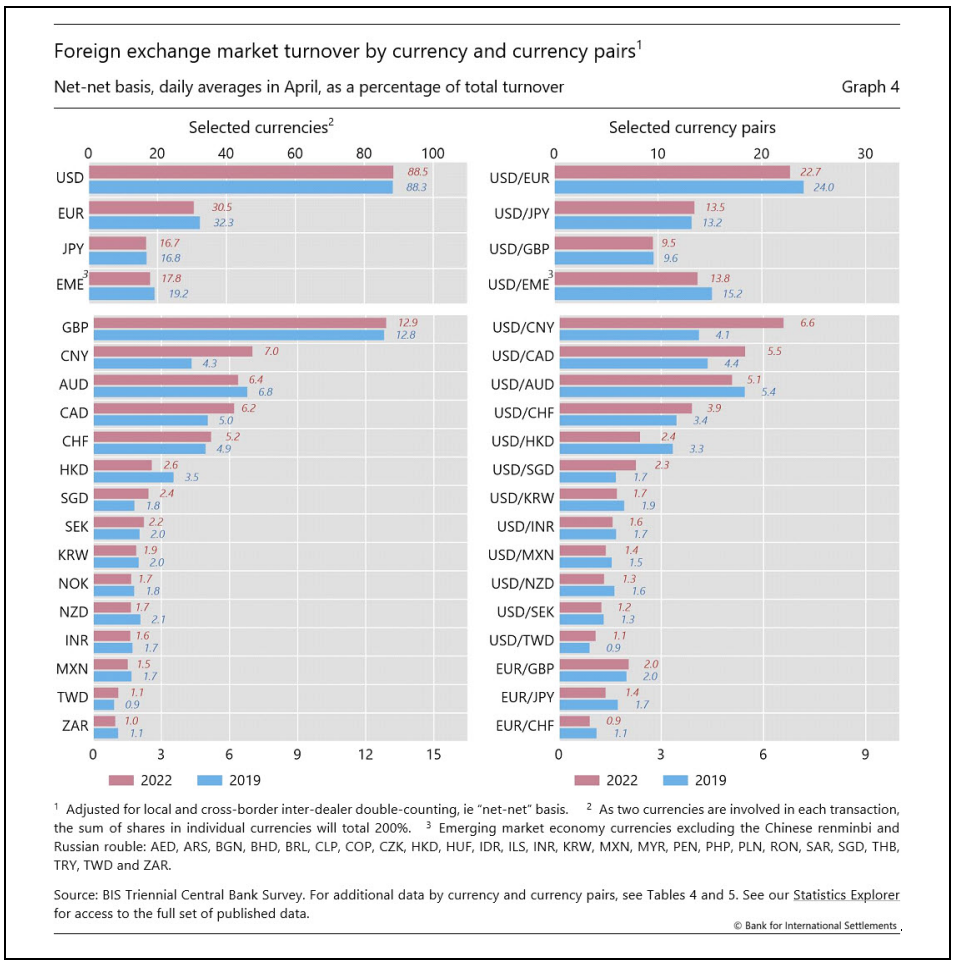
The US dollar was on one side of 88% of all trades (unchanged from 2019). The share for the euro decreased marginally to 31% (from 32% in 2019), and those for the Japanese yen and the pound sterling remained unchanged at 17% and 13%, respectively. The renminbi share rose to 7%, making it the fifth most traded currency in 2022 (up from eighth place in 2019 with a 4% share).

Trading at sales desks in five jurisdictions – the United Kingdom, the United States, Hong Kong SAR, Singapore and Japan – amounted to 78% of all FX trading ("net-gross" basis). Trading activity in the United States and Singapore grew by more than the global average.

Turnover in foreign exchange markets

Turnover in OTC FX markets averaged $7.5 trillion per day in April 2022. The 14% growth since the April 2019 Survey ($6.6 trillion per day) was the lowest triennial growth rate in all but two surveys since 2004. This was despite data collection coinciding with heightened FX volatility due to changing expectations about the path of future interest rates in major advanced economies, rising commodity prices and geopolitical tensions following the Russian invasion of Ukraine. At the same time, Covid-19 restrictions in place in several reporting jurisdictions, including in China and Hong Kong SAR, may have suppressed turnover.

Exhibit 6.1: Foreign Exchange Market Turnover by Currency and Currency Pairs as on April 2022



Source: https://www.bis.org/statistics/rpfx22_fx.htm

Turnover by currency and currency pairs

The US dollar remained the world's dominant vehicle currency. It was on one side of 88% of all trades in April 2022, unchanged from the previous survey 2019.

The next three most traded currencies – the euro, the Japanese yen and the pound sterling – retained their relative rankings. The euro continued to be the world's second most traded currency, on one side of 30.5% of all trades in April 2022 (down slightly from 32% in 2019). The Japanese yen and sterling were on one side of 17% and 13% of all trades, respectively, virtually unchanged since the 2019 survey.

The Chinese renminbi exhibited the biggest increase in market share since the 2019 survey, being on one side of 7% of all trades in 2022 (up from 4% in 2019). As a result, the renminbi became the fifth most traded currency, up from eighth place three years ago.

Some other currencies also saw relatively large changes in market share. While the Hong Kong dollar remained the ninth most traded currency, its share in global FX turnover decreased from 3.5% in 2019 to 2.6% in 2022. By contrast, the shares for the Canadian dollar and Singapore dollar increased noticeably.

Speculation in the forex markets is essentially a zero-sum game if it is considered as an activity only among speculators. The gain of one speculator must be the loss of another. Therefore, at least theoretically market makers taken together cannot make profits or incur losses. However, the presence of hedgers and the interventions resorted to by the central banks of various countries result in net speculative gains or losses.

In India, all dealings in foreign exchange are regulated by the Foreign Exchange Management Act, 1999 (FEMA). Reserve Bank of India is the regulatory authority for the Act. According to FEMA, only those entities can deal in foreign exchange, which are authorized to do so by RBI. The Act provides for entities to be authorized either as Authorized Dealers or as 'Money Changers'. Authorized dealers are generally commercial banks and form a large part of the interbank market in India. 'Money changers' can be either 'full-fledged money changers' or 'restricted money changers'. While the former is authorized to both buy and sell foreign currency from their customers, the latter can only buy the same. 'Money changers' can deal only in notes, coins, and traveler's cheques. The Authorized dealers, on the other hand, can deal in all the items classified as foreign exchange by FEMA. Thus, they are permitted to deal with all documents relating to exports and imports. The authorized dealers must operate within the rules, regulations and guidelines issued by the Foreign Exchange Dealers' Association of India (FEDAI) from time to time. The offices/branches of Authorized Dealers (ADs) are classified into four categories.

These categories are:

- **Category I:** [20]It includes all types of commercial banks irrespective of nationalized banks, scheduled banks, private banks, and foreign commercial banks operating in India. These segments of banks are allowed to deal in all types of foreign exchange transactions related to current and capital account transactions according to the norms and procedures laid down by the RBI.
- **Category II:** It includes the 'Upgraded Full-Fledged Money Changer' and another new inclusion like 'Department of Post' and various types of 'NBFC's which are operated in open markets. As per the RBI, the details of dealers classified under this category are considered as per region basis. It deals in transactions of foreign exchange which is 'non-trade' in nature.
- **Category III:** The Category III of Authorized Dealer operates with the purpose to boost international trade by providing them adequate availability of foreign currency for promotion of international trade as per the norms laid down in Section 10 of the FEMA Act 1999. It includes major players of financial institutions like IFCI, SIDBI EXIM Bank and various factor agencies.
- **Full-Fledged Money Changers (FFMC):** FFMCs are authorized to purchase foreign exchange from residents and non-residents visiting India and to sell foreign exchange for certain approved purposes. The main objective of the enactment of FFMCs is to provide easy access for the common man to foreign exchange transactions.

The Indian foreign exchange market consists of three tiers. Tier 1 consists of all the transactions between the Authorized Dealers and the RBI. Tier 2 is the interbank market referred to earlier, i.e., the market in which the authorized dealers deal with one another. Money changers are required to offset their positions created by dealing with their customers, in this interbank market. Tier 3 is the retail segment, where authorized dealers and money changers deal with their customers.

Foreign Exchange

Foreign exchange is defined in terms of Section 2 of FEMA Act, 1999 as foreign currency including:

i. All deposits, credits and balances payable in any foreign currency;
ii. Any drafts, traveler's cheques, letters of credit and bills of exchange expressed or drawn in Indian currency and payable in foreign currency;
iii. Any instrument giving anyone the option of making it payable either partly or fully in a foreign currency.

[20] https://blog.ipleaders.in/authorized-dealers-handling-foreign-exchange/

Here, the term currency in 'foreign currency' includes coins, bank notes, postal notes, postal orders, and money orders.

In other words, foreign exchange includes all kinds of claims of the residents of a country to foreign currency payable abroad.

6.4 Exchange Rate Quotations

An exchange rate quotation is the price of a currency stated in terms of another. It is like the expression of the price of a commodity. Yet, there is a peculiarity attached to exchange rate quotes. In exchange rate, both commodities are currencies. Hence, two way quote exists. But in other commodities, the commodity is expressed (weight or volume as measure) in monetary terms.

For example, 10 kilos of potatoes, quintal of cotton, a barrel of crude oil, 10 grams of gold etc.

In case of an exchange rate quotation, both the items involved are a form of money, i.e. both are currencies. So, the price of any one of them can be quoted in terms of one unit of the other. Due to this, there exist several ways to express the exchange rates between a pair of currencies.

It can be noticed that various methods of expressing exchange rates have been used. Throughout this book (unless otherwise specified), exchange rates will be mentioned in terms of A/B, where currency B is being bought or sold, with its value being expressed in terms of currency A. In such a quote, currency B is referred to as the base currency.

Various kinds of quotes are described in the following sections.

6.4.1 American vs. European Quote

A quote can be classified as European or American (US) only if one of the currencies is the Dollar. A US quote is the number of Dollars expressed per unit of any other currency, while a European quote is the number of units of any other currency expressed per Dollar. In almost all the countries, most of the exchange rates are quoted in European terms. The British pound, the Irish pound and the South African rand are a few examples of currencies quoted in the US terms.

The following provides an overview of how the currency is quoted in relation to another currency.

Direct vs Indirect Quote

Direct quotation is where the cost of one unit of foreign currency is given in units of local currency, whereas indirect quotation is where the cost of one unit of local currency is given in units of foreign currency. Indirect quotation has not been required until now, because direct quotation was usually used for exchange rates. A "direct quote" is when the currency pair uses the domestic currency as the base

currency. An "indirect quote" is when a currency pair uses the domestic currency as the quoted currency.

If you're looking at the U.S. dollar as the foreign currency, a direct currency quote of USD = INR 82.7500 (as on 21st February, 2022) would require ₹ 82.7500 to buy one unit of US dollar currency and the indirect quote of INR 100 = USD 1.2084 mean USD 1.2084 would cost an amount equivalent to INR 100.

Until August 2, 1993, the indirect methods of quoting exchange rates used to be followed in India. Since that date, however, the direct quote method is being used. The concepts of the US and the European quotes were more popular in other countries, in comparison to the direct and indirect quotes. With the start of the dual currency phase of the European Monetary Union (EMU), indirect quotation is now being used within Europe for exchange rates with the EUR. Even though indirect quotation is becoming internationally, more widely accepted, there still exist many limitations, involved in processing indirect exchange rates.

Bid and Ask Rate

In the quotes given above, there was one single rate at which the currencies were being bought and sold. For example, the Rupee-Dollar exchange rate was given as ₹/US$ 82.7500/82.7525. In reality, the rate at which a bank is ready to buy a currency will be different from the rate at which it stands ready to sell that currency. These rates are called the 'bid' and the 'ask' rates respectively. The difference in these rates represents the cost the bank incurs in these transactions, a small return on the capital employed, and the compensation for the risk it takes. This risk arises because of the possibility of the exchange rate moving in an unfavorable direction before the bank is able to offset the transaction. The single rate mentioned above is generally the mid-rate, i.e. the arithmetic mean of the bid and the ask rates. The difference between the bid rate and the ask rate is called the bid-ask spread, or simply the spread. This spread is seen to be higher in the retail market than in the interbank market. This is because of the higher volumes and greater liquidity in the interbank market (lower the liquidity, higher the risk of the transaction being set off at a disadvantageous rate, and hence, higher the spread). An additional reason is that the counter-party risk (the risk of the other party not fulfilling its commitment) is lower in the interbank market since most of the players are large commercial banks. As this bid-ask spread arises due to the presence of transaction costs, the absence of these costs would result in a single rate being quoted by banks for both buying and selling the currency.

Before we go into the explanations for the bid and the ask rates, it will be useful to look at some important conventions regarding these quotes. These are:

a. The bid rate always precedes the ask rate. Let us see the exchange rate quotation as on 21st Feb 2023. ₹/US$: 82.7500 / 82.7525, here ₹ 82.7500 is the bid rate while 82.7525is the ask rate.

b. The bid and the ask rate are separated by either a slash (/) or a dash sign (–).

c. The quote is always from the banker's point of view. That is, the banker is ready to buy Dollars at ₹ 82.7500 per Dollar and sell at ₹ 82.7525 per Dollar. A banker's buy rate is the rate at which the customer can sell a currency and vice-versa. So, if a customer wishes to sell Dollars, it will have to sell them at the bank's buying rate of ₹ 82.7500 per Dollar.

   Let us understand these rates with the help of an example. Let the exchange rate of the Indian Rupee with the US Dollar be

   ₹/US$: 82.7500/82.7525

Here the US Dollar (currency B) is being bought and sold, with its price quoted in terms of the Indian Rupee (currency A). In this quote, bid rate is the rate at which the bank is ready to buy one Dollar, which is the first term from the left, i.e. ₹ 82.7500. In other words, it is the number of Rupees that a bank is ready to pay in exchange for one Dollar. The bank is bidding for the Dollar at this rate. The ask rate is the rate at which the bank stands ready to sell one Dollar in exchange for Rupees. It is the number of Rupees the bank is ready to accept for, or is asking for selling a Dollar. This rate is ₹ 82.7525.The bid rate is always lower than the ask rate. This is because the bank will be ready to pay less for a unit of currency than it receives, to make a profit.

6.4.2 Interbank Quote vs. Merchant Quote

Merchant quote is the quote given by a bank to its retail customers. On the other hand, a quote given by one bank to another (or to any other customer in the interbank market) is called an interbank quote. It has been mentioned that a quote is invariably the banker's quote.

If two banks are in the forex market, what is the convention we follow?

If ICICI Bank is asking the quote from State Bank of India, the convention is that the bank requesting the quote (here in this case ICICI Bank) is the customer and the quote will be taken as that of the bank giving the quote (here in this case State Bank of India), i.e. the one which is acting as the market-maker. SBI is the market maker. ICICI Bank is the customer.

Market Mechanism and Conventions

Let us now see how deals are struck in the interbank market. Suppose, a bank requires GBP 1,000,000. The dealer of the bank approaches another bank and asks for a quote in the sterling, without mentioning whether he/she wants to buy or sell. The market-making bank gives him a two-way quote (i.e., both the bid and ask rates for sterling). If the ask rate for the pound is acceptable to the banker, he/she says – "One mine" – implying that he/she has bought GBP 1,000,000. The trade will enter the books of both the banks and written confirmations of the trade

would be sent later. The settlement of the trade will take place through any of the available electronic money transfer systems (like CHIPS). Suppose, the bank wanted to sell pounds and found the quoting bank's bid rate acceptable, it would instead have said – "One yours" – implying that it has sold GBP1,000,000 to the market making bank.

While giving a two-way quote, a bank keeps the bid and ask rates at such levels which both buyers and sellers of the relevant currency are likely to find attractive. Hence, the bank expects to receive both buy and sell orders from the market. If the bank is getting orders for only one side of the transaction, it would mean either of two things – either the rates quoted by the bank are out of alignment with the rates being quoted by other players in the market, or there is too much buying or selling pressure in the market for that currency. In either of the cases, the bank would have to adjust its quote. Let us take the scenario where the bank is ending up getting only buy orders for a currency (i.e., the bank is only buying the currency), without being able to sell. It would mean that the market is getting a competitive rate for selling the currency to the bank, but the bank's selling rate is too high to attract buyers. On the other hand, it could also mean that there are too many sellers in the market. In both the cases, the bank will have to reduce its rates on both the buy and sell side. The lower bid rate will attract a fewer number of sellers, while the lower ask rate would encourage customers to buy from the bank. In case the bank is getting too many orders to sell currency to customers, it would have to increase both the bid and the ask rates, to attract more customers interested in selling the currency and fewer interested in buying it.

The quotes are generally given in the market as on 21st Feb 2023: ₹/US$:82.7500/82.7525

It is also a practice to state the same quote as: ₹/US$: 82.7500/25

The last two digits of an exchange rate are the points or pips. The rest of the rate is called big figure. 82.75 is the big figure.

With 525 representing the last three digits of the ask rate, the rest of the digits being common with the bid rate.

Since the dealers in currencies would anyway be aware of the going rate, the big figures are not specified. In the interbank market, the quote is generally further shortened to:

₹/US$: 500/525

There are a few currencies which are quoted in 100s rather than 1s or 2s. The reason is that their value is too small to be quoted otherwise. An example is the Japanese yen. Its quote generally looks like:

¥/US$: 134.40 (as on 21st Feb 2023)

When the quote is given with such currencies as the base currency, the quote is for 100 units of the currency rather than one unit. For example, the corresponding US$/¥ quote will be:

US$/100¥: 0.7400/20

The last after-decimal digit of a quote is known as a point and the last two as a US$/¥.

The quotes given by different banks for the same pair of currencies may not necessarily be the same, but they must be within certain limits to prevent arbitrage. Let us see an example to understand these limits. Suppose, there are two banks A and B. Their quotes for the Euro/$ rate as on 21st Feb. 2023 are:

A — Euro/US$: 1.0671/75

B — Euro/US$: 1.0668/70

As A's bid rate is greater than B's ask rate, there is a risk-free arbitrage opportunity available. (Arbitrage is the process of buying and selling the same asset at the same time, to profit from price discrepancies within a market or across different markets. When it does not involve any commitment of capital or the taking on of risk, it is referred to as risk-free arbitrage). Dollars can be bought from A at euro 1.0671/US$ and sold to B at euro 1.0670/US$, thus making a gain of euro 0.0001 per Euro . Thus, any bank's bid rate must be lower than other banks' ask rate, and it's ask rate greater than other banks' bid rate. Sometimes, banks deliberately maintain their rates out of alignment with the rest of the market, because they require only one type of transactions to come to them. For example, a bank may have an overbought position in marks (i.e., it may have bought more marks than it sold). In such a case, it may like to keep its ask rate lower to attract customers who want to buy marks.

Note: According to FEDAI rules, exchange rates in the merchant as well as the interbank markets are to be quoted up to 4 decimals, with the last two digits being in multiples of 25 (for e.g., ₹/US$: 82.7500/82.7550). The card rates of banks (the reference rates given by the dealing room to the 'B category' branches at the beginning of the day) should be either quoted in two decimals, or quoted in 4 decimals with the last two figures being 0 (for e.g., ₹/US$: 82.6000 or 82. 8000).

According to Rule 5 Foreign Exchange Contracts 11th Version of FEDAI Rule (2019) for merchant quotations, the exchange rate shall be quoted in direct terms i.e. so many Rupees and Paisa for 1 unit or 100 units of foreign currency. Rounding off Rupee equivalent of the foreign currency settlement of all merchant transactions may be affected by rounding off rupee amount or in actual paise, as per the banks own policy.

The following gives data on the value assigned to the legacy currency when the constituents adopted Euro currency.

[21]Euro and its Constituents

On January 1, 1999, the Euro (EUR) was introduced as an account currency, replacing the 'European Currency Unit' at par. The 'European Currency Unit' was a theoretical basket of currencies rather than a physical currency. Initially, 11 of the countries in the European Economic and Monetary Union replaced their own currencies with the Euro: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain. Greece followed suit in 2001, Slovenia in 2007, Malta and Cyprus in 2008, and Slovakia in 2009. On January 1, 2014, the Latvian Lats was also replaced by the Euro.

Value of Obsolete National Currencies

Euro bank notes and coins began circulating in 2002 with the old notes and coins gradually being withdrawn from circulation. The precise dates that each old currency ceased being legal tender and their official fixed rates are shown in the table below:

Legacy (Old) Currency	Conversion from EUR	Obsolete
ATS Austria, Schilling	1 EUR = 13.7603 ATS	28-Feb-2002
BEF Belgium, Franc	1 EUR = 40.3399 BEF	28-Feb-2002
CYP Cyprus, Pound	1 EUR = 0.58527 CYP	31-Jan-2008
DEM Germany, Deutsche Mark	1 EUR = 1.95583 DEM	28-Feb-2002
EEK Estonia, Kroon	1 EUR = 15.6466 EEK	15-Jan-2011
ESP Spain, Peseta	1 EUR = 166.386 ESP	28-Feb-2002
FIM Finland, Markka	1 EUR = 5.94573 FIM	31-Jan-2008
FRF France, Franc	1 EUR = 6.55957 FRF	17-Feb-2002
GRD Greece, Drachma	1 EUR = 340.750 GRD	28-Feb-2002
IEP Ireland, Pound	1 EUR = 0.78756 IEP	9-Feb-2002
ITL Italy, Lira	1 EUR = 1936.27 ITL	28-Feb-2002
LTL Lithuania, Litas	1 EUR = 3.45280 LTL	15-Jan-2015
LUF Luxembourg, Franc	1 EUR = 40.3399 LUF	28-Feb-2002
LVL Latvia, Lats	1 EUR = 0.70280 LVL	15-Jan-2014
MTL Malta, Lira	1 EUR = 0.42930 MTL	31-Jan-2008
NLG Netherlands, Guilder (Florin)	1 EUR = 2.20371 NLG	28-Jan-2008
PTE Portugal, Escudo	1 EUR = 200.482 PTE	28-Feb-2002
SIT Slovenia, Tolar	1 EUR = 239.640 SIT	14-Jan-2007
SKK Slovakia, Koruna	1 EUR = 30.1260 SKK	17-Jan-2009

[21] http://www.xe.com/currency/eur-euro, 2017

There are other sovereign states that are not part of the European Union having adopted the Euro, including the Principality of Andorra, the Principality of Monaco, the Republic of San Marino, and the Vatican City. The euro is also used in many territories, departments, and sovereign states of Euro-zone countries, such as the Azores, Balearic Islands, the Canary Islands, Europa Island, French Guiana, Guadeloupe, Juan de Nova, the Madeira Islands, Martinique, Mayotte, Reunion, Saint-Martin, Saint Pierre, and Miquelon, to name just a few. The euro is used as a trading currency in Cuba, North Korea, and Syria and several currencies are pegged to it.

6.4.3 Inverse Quotes

For every quote (A/B) between two currencies, there exists an inverse quote (B/A), where currency A is being bought and sold, with its price expressed in terms of currency B. For example, for a ∈/US$ quote, there exists a US$/∈ quote. The implied inverse quote can be calculated from a given quote in a very simple way. Let us take the example of a ∈/US$ quote. Let the ∈/US$ quote in Frankfurt be:

∈/US$: 1.0733/1.0737

The (∈/US$) bid rate is the rate at which the bank is ready to buy Dollars (which also means the rate at which it is ready to sell∈, which will be the ask rate in the US$/∈ quote). Hence the (∈/US$) bid rate would correspond to the (US$/∈) ask rate. In ∈/US$ terms, this rate is 1.0733. In US$/ ∈ terms, it would be the reciprocal of this figure, i.e. 1/1.0733 which is equal to $ 0.9317/∈. Similarly, the (∈/US$) ask rate would correspond to the (US$/∈) bid rate. In ∈/US$ terms, this rate is 1.0737, which is equal to US$ 0.9314/∈ (1 / 1.0737). Hence, to calculate the implied inverse quote, the bid and the ask terms of the given quote must be reversed and their reciprocals calculated. For this example, the calculations can be shown as:

$$\text{Implied } (US\$/\in)_{bid} = 1/(\in/US\$)_{ask} \qquad \text{(Eq. 1)}$$

$$\text{Implied } (US\$/\in)_{ask} = 1/(\in/US\$)_{bid} \qquad \text{(Eq. 2)}$$

So, the implied inverse rate is:

US$/∈: 0.9314/0.9317

These equations can be generalized as:

$$\text{Implied (B/A) quote: } \frac{1}{(A/B)_{ask}} / \frac{1}{(A/B)_{bid}} \qquad \text{(Eq. 3)}$$

Now suppose that the actual B/A quote differs from the implied inverse quote. The result may be an arbitrage opportunity like the one when two banks quote widely different rates for a pair of currencies. Let the $/∈ quote in New York be:

US$/∈: 0.9285/0.9310

In this scenario, there is a possibility of buying ∈ in New York for US$0.9310/∈ and selling them in Frankfurt for US$ 0.9314/∈, thus making a riskless profit of US$ 0.0004/∈. This arbitrage activity involving buying in one market and selling in another is termed as two-way arbitrage. Such arbitrage opportunities quickly go away on profit-making by arbitrageurs. As they buy ∈ in New York, the ask rate of the US$/∈ quote goes up, and as ∈ is sold in Frankfurt, the ask rate of the ∈/US$ quote will go up till its reciprocal becomes lower than the increasing ask rate of the US$/∈ quote. Hence, to avoid arbitrage opportunities, the ask rate of the actual B/A quote should be higher than the bid rate of the implied B/A quote and the bid rate of the actual B/A quote should be lower than the ask rate of the implied B/A quote (i.e., the two quotes must overlap).

As can be observed, the synthetic inverse rate acting only as a limit on the actual inverse rate, is due to the presence of transaction costs (the costs to be incurred by a player in the market for buying or selling a currency) as a difference between the bid and the ask rates. One more transaction cost is the lump sum payment required to be made to the dealer, from whom a currency is bought or sold, as his fees or commission. These transaction costs make arbitrage activity less effective, as the profit stands reduced by the amount of the costs required to be incurred by the arbitrageur. Hence, the actual inverse rates can differ from the synthetic inverse rates by the amount of the transaction costs. In the absence of such transaction costs, the inverse rates would have to be exactly equal to the synthetic inverse rates. If there were no spread between the bid and the ask rates for a currency (i.e., a person could buy a currency at the same price at which he could sell it) and there was no commission or fees to be paid to the dealer, the US$/∈ price in New York would have to be the exact reciprocal of the ∈/US$ price in Frankfurt. Let us assume that the ∈/US$ rate in Frankfurt were:

∈/US$: 1.0733

Then the US$/∈ rate in New York would be 1/1.0733, i.e., US$ 0.9317/∈. Otherwise, an arbitrageur would have the opportunity of making profits, and in the process, would drive the rates in the two markets towards equalization.

Activity 6.1

a. Define ‘Foreign Exchange’. Briefly state the nature and process involved in the mechanics of exchange rate quotations.

b. To buy one unit of USD, it costs INR 64.80 as quoted in the market. Illustrate the norms behind exchange rate quotations that is preferably used by exchange traders to deal with foreign currency transactions in the Indian forex market.

6.4.4 Cross Rates

In the foreign exchange markets, it is a practice to quote most of the currencies against the dollar; and to calculate the exchange rates between other currencies with the dollar as the intermediate currency. For example, the ∈/₹ rate will be calculated through the ∈/$ quote and the US$/₹ quote. The ∈/₹ rate thus calculated is called a 'cross rate' or the 'synthetic rate'. Though generally the third currency used is the dollar, the cross rate between two currencies can be calculated using any other currency as the intermediate currency.

These synthetic rates can be calculated using a process like the one we used in calculating the implied inverse quote. Let us assume that we need to calculate the Switzerland franc/Canadian dollar (SFr/Can$) rate from given SFr/ US$ and US$/Can$ quotes.

Let the given quotes be:

SFr/ US $: 0.9954 / 0.9962

US $/Can$: 0.7475 / 0.7500

For calculating the synthetic rates, we shall have to see how the arbitrageur will operate if he/she wishes to operate in the markets giving the SF_r/US$ and the US$/Can$ rate, instead of using the direct SFr/Can$ quote. The $(SFr/Can\$)_{bid}$ rate will be the number of francs which a bank would be ready to pay to buy one Can$. The arbitrageur, say X, can sell 1 Can$ for: $ 0.7475

The bank will be ready to buy one dollar for: SFr 0.9954

Hence, for selling one Can$, X will get

0.7475 x 0.9954 = 0.7440 Francs

That is, for buying one Can$, the bank would be ready to pay: SFr 0.7461

Hence, the synthetic $(SFr/Can\$)_{bid}$ rate

= 0.7440

= 0.9954 x 0.7475

= $(SFr/US\ \$)_{bid}$ x $(US\ \$/Can\$)_{bid}$

Similarly, the $(SFr/Can\$)_{ask}$ rate will be the number of francs the bank will require to be paid for selling one Can$. In terms of the US $/Can$ rates, a bank would take 0.7500 dollars to sell one Can$. To be able to pay these dollars, X would need to buy them in the SFr/$ market. X can buy a dollar in that market for SFr 0.9962. Hence, X can buy one Can$ for:

$$0.9962 \times 0.7500 = 0.7472 \text{ francs.}$$

In other words, the bank would be ready to sell one Can$ for: 0.7472 francs

So, the synthetic $(SFr/Can\$)_{ask}$ rate

$$= 0.7472$$
$$= 0.9962 \times 0.7500$$
$$= (SFr/US\$)_{ask} \times (US\$/Can\$)_{ask}$$

Hence, the synthetic quote is:

SFr/Can$: 0.7461/0.7472

These rates can be generalized as:

$$\text{Synthetic } (A/C)_{bid} = (A/B)_{bid} \times (B/C)_{bid} \quad \text{(Eq. 4)}$$
$$\text{Synthetic } (A/C)_{ask} = (A/B)_{ask} \times (B/C)_{ask} \quad \text{(Eq. 5)}$$

where A, B and C are three currencies.

These synthetic rates can also be calculated if the inverse quotes are available for any of the required rates. For example, if instead of the (B/C) rates, the (C/B) quote is available, the implied inverse rate can be calculated and used. In such a case, the synthetic rates can be calculated as:

$$\text{Synthetic } (A/C)_{bid} = (A/B)_{bid} \times 1/(C/B)_{ask} \quad \text{(Eq. 6)}$$
$$\text{Synthetic } (A/C)_{ask} = (A/B)_{ask} \times 1/(C/B)_{bid} \quad \text{(Eq. 7)}$$

As in case of implied inverse rate, the synthetic quote and the actual quote between a pair of currencies should overlap (i.e., the bid rate of one should always be lower than the ask rate of the other). There are two reasons for this. First, if the actual rates are too much out of line with the cross rates, then market players in genuine need of a currency would buy and sell through the markets giving them more favorable rates. The second reason is the arbitrage opportunity which would arise in case of a misalignment of actual and cross rates. In both the cases, the resultant demand-supply mismatch would force the synthetic cross rate and the actual rate to come in line with one another. Let us see how the arbitrage process works. As we have seen, the synthetic quote between the franc and the Can$ is:

SFr/Can$: 0.7461/0.7472

This synthetic quote has been calculated from the following given quotes:

SFr/US $: 0.9954/0.9962

US $/Can$: 0.7495/0.7500

Now, suppose that the actual quote between the franc and the Can$ is:

SFr/Can$: 0.7475/0.7485

As we see, the synthetic ask rate is less than the actual bid rate, giving the arbitrageurs a chance to make a profit by three-point arbitrage (the process of making arbitrage profits involving three markets, where three transactions must be entered into to achieve the desired results). To make profits, a person should buy low and sell high. The rate at which the arbitrageur, say X, can sell one Can$ against the franc is SFr 0.7475/Can$. The rate at which X can buy one Can$ (through the synthetic market) is SFr 0.7472/Can$. Let us say that X starts with one franc.

With one franc, he/she can buy:

$$\frac{1}{0.9962} \text{ Dollars}$$

Since 0.7562 dollars fetch one Can$, with 1/5.5978 dollars X can buy:

$$\frac{1}{0.7500} \text{ x } \frac{1}{0.9962} \text{ Can\$}$$

These Can$ can then be sold by X in the SFr/Can$ market for:

$$0.7475 \text{ x } \frac{1}{0.7500} \text{ x } \frac{1}{0.9962} \text{ SFr}$$
$$= \text{SFr } 1.000468$$

Thus, X makes a profit of SFr 0.000429 for every Franc bought and sold.

Now, let us see what will happen if the actual rates are:

SFr/Can$: 0.7450/0.7456

The actual ask rate is now lower than the synthetic bid rate. X can now buy Can$ at SFr 0.7456/Can$ and sell them through the synthetic market at SFr 0.7461/Can$. In this Fr/Can$ market, X can sell one franc for:

$$\frac{1}{0.7456} \text{ Can\$}$$

As each Can$ can be sold for 0.7555 dollars, X can sell the Can$ for:

$$0.7495 \text{ x } \frac{1}{0.7456} \text{ US \$}$$

Since each dollar fetches 5.5971 francs, X can sell the dollars for:

$$0.9954 \text{ x } 0.7495 \text{ x } \frac{1}{0.7456} \text{ SFr}$$
$$= \text{SFr } 1.000605$$

So, X makes a profit of 0.000605 francs for every Franc bought and sold.

These arbitrage processes will adjust the rates in both the cases in all the three markets in such a way, that the actual SFr/Can$ rates will come in alignment with the synthetic rates. We can write the conditions for no arbitrage possibility as:

$(A/C)_{bid} \leq$ (actual) $(A/C)_{ask}$ (synthetic) (Eq. 8)

$(A/C)_{ask} \geq$ (actual) $(A/C)_{bid}$ (synthetic) (Eq. 9)

Using equations 4 and 5, we can rewrite the above equations as:

$(A/C)_{bid} \leq (A/B)_{ask}$ x $(B/C)_{ask}$ (Eq. 10)

$(A/C)_{ask} \geq (A/B)_{bid}$ x $(B/C)_{bid}$ (Eq. 11)

where all the rates are actual rates.

Equations 10 and 11 are called the no-arbitrage conditions. These signify the limits imposed by the synthetic rates on the actual quote for a pair of currencies (upper and lower limits for the bid and the ask rates respectively). The actual rates only should be within these limits but they need not necessarily be the same as the synthetic rates. In fact, the synthetic rate having been calculated from two quotes includes the bid-ask spread of both the quotes. This results in the synthetic rate having a very high bid-ask spread. In reality, a bank giving direct quotes between two such currencies may be able to quote at much lower spread, provided its business volumes in these currencies is high. In the example given above, the actual SFr/Can$ quote may be something like:

SFr / Can$: 0.7470/ 0.7482

As in the case of inverse rates, transaction costs allow the actual A/C quote to deviate from the synthetic cross rates to some extent. As mentioned earlier, in the absence of such costs, the bid and the ask rates will be the same. These single rates will force the actual A/C quote to be exactly equal to the synthetic cross rates.

According to Eq. 10,

$$(A/C)_{bid} \leq (A/B)_{ask} \text{ x } (B/C)_{ask}$$

It can be rewritten as:

$$1 \leq \frac{(A/B)_{ask} \times (B/C)_{ask}}{(A/C)_{bid}}$$

or,

$$(A/B)_{ask} \text{ x } (B/C)_{ask} \text{ x } (C/A)_{ask} \geq 1 \quad \text{(Eq. 12)}$$

Similarly, Eq. 11 says that:

$$(A/C)_{ask} \geq (A/B)_{bid} \text{ x } (B/C)_{bid}$$

It can be rewritten as:

$$1 \geq \frac{(A/B)_{bid} \times (B/C)_{bid}}{(A/C)_{ask}}$$

or,

$(A/B)_{bid}$ x $(B/C)_{bid}$ x $(C/A)_{bid} \leq 1$. (Eq. 13)

Check Your Progress – 1

1. Which of the following players act as a market maker, who deals in the market in executing both the client's order as well their account?
   a. Large commercial banks
   b. Forex brokers
   c. Large corporations
   d. Small corporations
   e. Central banks
2. Which of the following term refers to a market in which the commercial banks deal with their customer?
   a. Wholesale market
   b. Retail Market
   c. Commercial market
   d. Interbank market
   e. Merchandise market
3. The term 'foreign exchange' is defined under which section of the Foreign Exchange Management Act 1999?
   a. 2
   b. 16
   c. 10
   d. 5
   e. 25
4. Which of the following quotes refers to the number of units of any other currency expressed per unit of dollar?
   a. The US
   b. European
   c. Retail
   d. Interbank
   e. Inverse

5. Which of the following statements is contradictory to the concept of the bid and the ask rate?
   a. The difference in these rates represents the cost incurred by bank in these transactions
   b. The possibility of risk arises on account of unfavorable movements in the exchange rates
   c. The single rate mentioned is nothing but the arithmetic of bid and ask rates
   d. The difference between the bid and the ask rate is called the spread
   e. The spread is seen to be lower in the retail market than in the interbank market

6.5 Types of Transactions

Foreign exchange transactions can be classified based on the time between entering a transaction and its settlement. They can basically be classified into spot and forward contracts. Spot transactions are those which are settled after 2 business days from the date of the contract. A forward contract (also called an outright forward) is one where the parties to the transaction agree to buy or sell a commodity (here, a currency) at a predetermined future date at a price. This future date may be any date beyond two business days. The price and the terms of delivery and payment are fixed at the time of entering the contract. In the forex markets, forward contracts generally mature after 1, 2, 3, 6, 9, or 12 months.

A forward contract is normally entered to hedge oneself against exchange risk (i.e., the uncertainty regarding the future movements of the exchange rate). By entering a forward contract, the customer locks-in the exchange rate at which he will buy or sell the currency.

6.5.1 Forward Quotes

Forward quotes are given just like spot quotes given earlier. The same rules regarding calculation of implied inverse rates, synthetic cross rates etc. apply to the forward rates also. The conditions to be fulfilled for ensuring that there is no scope for two-way arbitrage and three-way arbitrage are also the same. For example, the three-month forward rate between the £ and the ¥ may look like:

3-m ¥/£: 139.35/139.40

The implied inverse rate would be:

3-m £/100¥: (1/139.40 x 100) / (1/139.35 x 100)

= 0.7174/0.7176

If the 2-month forward $/Aus$ and the $/SGD quotes are

2-m $/Aus$: 0.7647/0.7659

2-m $/SGD: 0.7162/0.7168

then the SGD/Aus$ synthetic cross rates will be

2-m SGD/Aus$:

(1/0.7168 x 0.7647) / (1/0.7162 x 0.7659)

= 1.0668/1.069 = 0.997

Discount and Premium

A currency is said to be at premium against another currency if it is more expensive in the forward market than in the spot market. In this case, its forward rate will be higher than its spot rate. This happens when the future spot rate is expected to be higher than the current spot rate. Conversely, a currency is said to be at a discount if it is cheaper in the forward market than in the spot market. In this case, its forward rate will be lower than its spot rate. This happens when the future spot rate is expected to be lower than the current spot rate. Let us assume the ₹/US$ quotes to be:

₹/US$: 81.83/85

3-m ₹/US$: 82.23/28

Here, the bank is ready to give only ₹ 81.83 currently in exchange for a Dollar, while it is ready to give ₹ 82.23 after 3 months. Similarly, the bank is charging only ₹ 81.85 for selling a Dollar now, while it is charging ₹ 82.28 for a delivery 3 months hence. So, the Dollar is expected to be more expensive in the future, and hence is at a premium against the Rupee. On the other hand, the Rupee is expected to be cheaper in the future and hence is at a discount against the Dollar.

Let us now assume the US$/£ quotes to be:

US$/£ : 1.2453/58

3-m US$/£ : 1.2213/24

Here the Dollar is at a premium against the Pound, while the Pound is at a discount against the Dollar. It is possible that a currency may be at a premium against one currency, while being at a discount against another at the same time. It is also possible that a currency be at a premium against another for a particular forward maturity, while being at a discount against the same currency for another forward maturity. Example the US$/£ quotes may be:

US$/£ : 1.2453/58

2-m US$/£ : 1.2458/64

3-m US$/£ : 1.2213/24

Here, the Pound is at a premium against the Dollar for the 2-month maturity, but at a discount for the 3-month maturity. It is also possible to have such a situation

where a currency is at a premium against another for a forward maturity, but a discount between two forward maturities. Example the US$/£ quotes may be:

US$/£ : 1.2453/58
1-m US$/£ : 1.2462/69
2-m US$/£ : 1.2458/65

Here, the Pound is at a premium against the Dollar for both the forward maturities, but at a discount between the one-month and the two-month maturities.

There is an important aspect about forward rates which needs to be observed here. Notwithstanding whether the base currency is at a premium or at a discount, the bid-ask spread increases as one goes into future. In the ₹/US$ quotes (where the base currency, i.e. the Dollar is at a premium), the spread increased from 2 Paise to 5 Paise. In the US$/£ quotes (where the base currency is at a discount), the spread increases from 5 points to 11 points. This happens because the liquidity in the market decreases with increasing maturity of the contract. This makes it difficult for the bank to offset the positions created in the retail market. Longer the maturity, lower the trading volume, higher the possibility of loss on account of movement of exchange rates in an unfavorable direction. It is important to remember that the risk (due to which the spread increases for a forward maturity) is not of the exchange rate moving unfavorably between the date of the contract and its maturity, but that of an unfavorable movement in the exchange rate between the time of the contract and the time when the bank offsets its position.

The difference between the spot rates and the forward rates can be expressed in terms of swap points. In the Rupee-Dollar example, the swap points will be 40/ 43(81.83 &82.23 and 81.85&82.28). In the Dollar-Pound example, the 3-month swap points would be 240/234 (1.2453-1.2213 and 1.2458-1.2224). From this we can observe the following rules:

i. When the swap points are low/high (as in the Rupee-Dollar example given above), currency B is at premium, A is at a discount. Add swap points to spot rate to get the outright forward rate, deduct swap points from the outright forward rate to get the spot rate.

ii. When the swap points are high/low (as in the Dollar-Pound example given above), currency B is at a discount and A is at a premium. Deduct the swap points from the spot rate to arrive at the outright forward rate, add them to the outright forward rate to arrive at the spot rate.

iii. The bid side swap points (i.e., on the left side of the swap points quote) are to be added to or subtracted from the spot bid rate (depending on whether the currency is at premium or discount) to arrive at the forward bid rate. The ask side swap points added to or subtracted from the spot ask rate, give the forward ask rate.

The annualized percentage premium on currency B can be calculated as follows:

$$\frac{\text{Forward}\,(A/B)_{mid} - \text{Spot}\,(A/B)_{mid}}{\text{Spot}(A/B)_{mid}} \times \frac{12}{m} \times 100$$

where 'm' is maturity of the forward contract in months.

A negative figure signifies that currency B is at a forward discount and A is at a premium, with a positive figure signifying the opposite.

In the Rupee-Dollar example, the annualized percentage premium on the Dollar can be calculated as follows:

Spot (₹/$) $_{mid}$

$$= \frac{81.83+81.85}{2} = ₹\ 81.84 \text{ / US\$}$$

3-m (₹/$) $_{mid}$

$$= \frac{82.23+82.28}{2} = ₹\ 82.2550 \text{ / US\$}$$

Premium

$$= \frac{82.2550-81.8400}{81.2400} \text{ x } \frac{12}{3} \text{ x } 100 = 2.028348\%$$

Similarly, in the US$/£ example, the annualized discount on the Pound for the 3-month maturity works out to 7.61%.

An important point that needs to be noted here is that the Pound being at 7.61% annualized discount does not necessarily mean that the Dollar will be at a 7.61% annualized premium against the Pound. Let us verify with the help of an example. The implied inverse quotes in the ₹/US$ example would be:

US$/₹ : 0.0122174/0.012220 (1/81.85;1/81.83)

3-m US$/₹ : 0.01215362/0.0121610 (1/82.28;1/82.23)

Hence,

Spot (US$/₹) $_{mid}$

$$= \frac{0.0122174+0.012220}{2}$$

$$= \$\ 0.0122187/₹$$

3-m (US$/₹) $_{mid}$

$$= \frac{0.01215362+0.0121610}{2}$$

$$= \text{US\$}\ 0.01215731/₹$$

Therefore, the annualized percentage discount on the Rupee will be:

$$= \frac{0.01215731-0.0122187}{0.01215731} \text{ x } \frac{12}{3} \text{ x } 100 = -2.01985472\%$$

Thus, while the Dollar is at a 2.028348 % premium against the Rupee, the Rupee is at a 2.01985472 % discount.

Usually the forward rates are not quoted straight. Instead, the premium or discount is quoted for different periods. (Refer Table 6.3).

Table 6.3: Forward Premiums (indication only) Paise per US$

Forward Premia as on 20th February, 2023 US4/INR in paise

Name	Bid	Ask
USDINR TN FWD (tomorrow next)	0.15	0.65
USDINR SN FWD (spot next)	0.15	0.65
USDINR SW FWD (spot week)	2	4
USDINR 1M FWD	12.25	14.25
USDINR 2M FWD	35	37
USDINR 3M FWD	48.5	50.5
USDINR 6M FWD	89	91
USDINR 9M FWD	130.75	132.75
USDINR 1Y FWD	173	175

Source: https://in.investing.com/currencies/usd-inr-forward-rates

We can observe from the table that forward premiums/discounts are quoted in subsidiary unit of the currency ('Paise' here). Exporters and importers for the period 1 month from 20th February, 2023 will receive a premium of 12.25 paise and importers have to pay premium of 14.25 paise. Similarly 1 year exporters receive a premium of 173 paise and the importers pay a premium of 175 paise.

In the Indian context, when the maturity of a forward contract is extended by cancelling the existing contract and entering a new contract for the extended duration, it is referred to as rolling over a forward contract. Rolling over of a forward contract can be used to hedge for longer term maturities for which forward contracts are not available. For example, in India, forward contracts for maturities greater than one year are not allowed. Let us suppose a party has an exposure for 3 years for which it wishes to hedge itself against movements in exchange rates. In such a case, it can hedge itself at least partially by initially

booking a forward contract for the maximum maturity available, and then rolling over the contract at the end of that period. However, this does not act as a perfect hedging mechanism, but provides an opportunity to hedge exposures at least partially. This is because at the time of booking the initial contract, the customer would not know the price he would need to pay at the time of rolling it over.

Forward Rates vs. Expected Spot Rates

If the speculators in the market were risk-neutral and where no transaction costs are involved, then the forward rate would be equal to the market's expected future spot rate.

This is so, because otherwise it would be possible to buy in one market and sell in the other to make profits. Let us take the case where the forward rate is lower than the expected spot rate. In such a case, the speculator would buy a forward contract expecting to sell in the spot market in the future at a higher price. The resulting increased demand in the forward market would increase the forward rate and drive it towards equalization with the expected future spot rate. If the forward rate is higher, speculators would sell in the forward market, thus pushing the forward rate down. However, there is also the risk of the spot rate turning out to be different from the expected spot rate and the speculators are not risk-neutral. They expect to be compensated for the risk that they take on. In addition, there is the presence of transaction costs to be contended with. These two factors result in the forward rate being different from the spot rate to some extent.

Broken-date Forward Contracts

A broken-date contract is a forward contract for a maturity which is not a whole month or for which a quote is not readily available. For example, if the quotes are available for a 6 month forward and a 9 month forward, but a customer wants a quote for a 7 month forward, it will be a broken date contract. The rate for a broken date contract is calculated by interpolating between the available quotes for the preceding and the succeeding maturities. Let us assume that in July, the quote for a contract maturing on August 31 is:

SFr/US$: 1.0012/18

At the same time, the quote for a contract maturing on October 31 is:

SFr/US$: 1.0041/53

Now, suppose a customer wants to enter a forward contract with the bank maturing on September 29, for purchasing dollars from the bank. For this purpose, the bank must give a quote. It can be observed that the dollar is at a premium and the swap points are 29/35 between August and October maturity. On the ask side, the premium is 35 points which is spread over (30 + 31) 61 days. The required maturity is 29 days away from the August maturity. Hence, the premium charged by the bank over and above the August rate will be 35 x

29/61, i.e., 17 points. Hence, the rate charged will be 1.0018 + 0.0017 = SFr 1.0035/$. Similarly, the buy and the sell rates can be calculated for any intervening date between two given maturities.

Option Forwards

Under the forward contract discussed until now, the settlement of the contract must take place on a specific date. This type of a contract can be used only when the customer knows the precise time as to when he/she would need to buy/sell a currency. There are circumstances in which the customer may know the estimated time when the need to deal in a foreign currency may arise, but may not be sure about the exact timing. For example, an exporter who has shipped his/her goods abroad may be aware that the ship would be expected to reach its destination in a month's time and expects to receive his/her payment within one month from the consignment being received by the buyer. Yet, he/she would not know the exact date the ship will reach. Hence, the date on which he/she will receive his/her payment. Similarly, for an importer, the time of requirement of foreign currency will depend upon the time when he/she receives communication from the foreign supplier regarding the dispatch of goods. Another example could be of a person who has bid for a contract. If the person's need for dealing in foreign currency is dependent upon his/her bid being accepted, then he/she may not know when the need will arise. These kinds of needs can be fulfilled by a contract called the option forward contract or the option forward. Under this contract, the customer of the bank has the option to ask for the contract to be settled anytime during a period, referred to as the option period. For example, a customer enters into an option forward contract on September 29 for selling dollars to the bank. The contract matures on December 31. The customer takes the option to sell dollars to the bank anytime in December. Here, the month of December is the option period. Giving quotes for this kind of a contract is not as straightforward as giving a quote for an outright forward contract. This is so because the rate at which the exchange of currencies will take place is fixed, while the timing of the exchange is not. If the bank quotes a rate which is appropriate for deals done at a particular period, and the exchange takes place at an unfavorable time, the bank would incur a loss on the deal. For example, if the bank enters a contract to sell dollars to a customer when the dollar is commanding a forward premium, and the bank's quote reflects the premium only up to the beginning of the option period, it will incur a loss if the customer exercises the option at the end of the option period (because the bank would get lesser premium than it would have charged for the complete period). Similarly, if the dollar was at a forward discount and the bank's quote were to reflect the discount for the full period, the bank would be incurring a loss were the customer to exercise the option in between the option period. To avoid a loss (or rather to make the maximum profit), banks follow these rules for giving a quote:

1. When the bank is buying a currency, it will add on the minimum premium possible (when the currency is at a premium) and deduct the maximum discount possible (when the currency is at a discount) from the spot rate. This would result in the bank quoting the rate applicable to the beginning of the option period when the currency is at a premium, and the rate applicable to the end of the option period when the currency is at a discount.
2. When the bank is selling a currency, it will add the maximum premium possible (when the currency is at a premium) and deduct the minimum discount possible (when the currency is at a discount) from the spot rate. This would result in the bank quoting the rate applicable to the end of the option period when the currency is at a premium, and the rate applicable to the beginning of the option period when the currency is at a discount. Thus, the bank considers the applicable quotes for the beginning and the end of the option period and gives a quote which is disadvantageous to the client, which, in effect, is the cost incurred by the client for the flexibility.

   Suppose the Euro/Swiss Franc rate is given as:

   Spot Euro/SFr : 0.9356/60
   3 – m forward : 10/15
   4 – m forward : 15/25

The Swiss franc is at a premium. If the bank contracts to sell SFr, with the option to take delivery exercisable by the customer anytime during the 4th month, the bank will load the maximum premium to the spot rate. It will implicitly be assuming that the customer will demand delivery when the currency is most expensive, and hence will charge the maximum rate. So, it will quote the rate euro 0.9385/SFr (0.9360 + 0.0025). If the contract were to buy SFr with the option to give delivery exercisable by the customer anytime during the 4th month, the bank would have assumed that the customer would choose to exercise his/her option when the SFr is at its cheapest, i.e., at the beginning of the fourth month. Hence, the bank would have loaded the minimum premium to the spot rate while giving the quotation. The rate would have been euro 0.9366/SFr (0.9356 + 0.0010).

Note that the 3-m forward rate is the rate applicable to the beginning of the option period (as the end of the 3rd month is the beginning of the fourth month), and the 4-m forward rate is the rate applicable to the end of the option period.

Suppose, the Can$/£ rate is:

Can$/£ : 1.6635/41
2 – m : 20/15
3 – m : 30/20

The bank enters a forward contract whereby the customer has the option to buy pounds from the bank anytime during the third month. As the pound is at a discount, and the bank would like to sell it at the maximum price possible, it will

deduct the minimum discount from the spot rate, which is 15 points. The bank will hence quote Can$ 1.6626/£ (1.6641-0.0015). If the forward contract is such that it gives the customer the right to *give* delivery anytime during the third month, the bank would have deducted the maximum discount to buy pounds at the cheapest rate possible. The rate would be Can$ 1.6605/£ (1.6635 – 0.0030).

How would the bank decide on its quote if a currency is at a premium at the beginning of the option period, and at a discount during the option period? The bank would follow the simple rule of buying at the lowest and selling at the highest *price*.

For example, if the SFr/Aus$ quotes were:

SFr/Aus$:0.7644/49
1 – m : 0.7655/65
2 – m : 0.7650/62

An option forward giving, the right to the customer to buy Aus$ anytime during the second month, the bank would quote the rate of SFr 0.7665/Aus$. If the customer's option were to sell Aus$, the rate given by the bank would be SFr0.7649/Aus$.

6.5.2 Swaps

A transaction whereby two currencies are exchanged by the parties involved, only to be exchanged back later, is termed a 'currency swap'. For example, as on 20th February, 2023 1 month forwards are quoted at 12.25/14.25. If SBI buys and sells 2 months on 20th February, 2023, they receive the premium of 12.25. Spot was going at Rs. 81.7500/81.7525.

They buy at 81.7500 and sell at Rs. 81.8725 (81.7500+12.25)

SBI buys USD 1 Million at ₹ 81.75 from Citi Bank for spot and sells at ₹ 81.8725 two months from now. The quantity exchanged of one of the currencies remains constant in both the legs of the swap, though the quantity of the second generally changes. So, a swap is nothing but the selling of one currency at a point of time to purchase it back later at a lower or a higher price.

A currency swap is a combination of two transactions – one spot and one forward – with an exchange of currencies taking place at predetermined exchange rates. The forward leg is in the opposite direction to that of the spot leg, i.e. the party selling currency A in the spot leg buys it in the forward leg and vice versa. As mentioned, the price of the currencies is different in the spot leg from that of the forward leg. This happens because of the expected depreciation/appreciation of the currency w.r.t. the other currency. For example, two parties may enter a swap whereby the first party sells one million Pounds to the second party against Dollars in the spot leg @ US$ 1.2885/£, and the second party sells one million Pounds to the first party against Dollars one month forward @ US$ 1.2765/£.

Here the number of Pounds exchanging hands is constant, whereas the number of Dollars exchanging hands is changing, depending on the exchange rate applicable to the two legs of the swap transaction. As opposed to a swap transaction, an outright forward is not accompanied by any spot deal.

A swap transaction whereby the foreign currency is bought in the first leg and sold in the second leg against the local currency is called a 'swap-in' or 'buy-sell swap'. For example, a swap-in Dollar in India would mean Dollars bought against the Rupee in the first leg and sold in the second leg. A swap-out or a sell-buy swap is the exact opposite, i.e. the foreign currency is sold in the first leg and bought in the second leg against the local currency. A forward-forward swap is one where both the legs of the transaction take place in the future. For example, if Dollars are bought one month forward @ ₹ 81.8725 US$ and sold two months forward (forward premium for 2 month 35-37) @ ₹ 82.0025/US$, it will be a forward-forward swap.

1st month to 2nd month premium 35-12.25 = 12.75 hence sell price of 2nd month was 81.8750+12.75. SBI receives a premium of 12.75 for one month in forward to forward transaction.

One of the uses of swaps is for hedging by entities investing or borrowing abroad. Hedging is the process through which an attempt is made to eliminate risk (or at least reduce it to tolerable levels) in a transaction. Take the example of a Canadian citizen who is investing in US bonds. He would know the amount of US Dollars he would receive on maturity, but not the US$/Can$ exchange rate that would prevail at that time. This would make his Can$ returns uncertain. To remove this uncertainty, the investor can enter swap-in Dollars, whereby he would buy the Dollars spot (which he could then use to invest in the bonds) and sell them forward at the time of maturity. This would fix the exchange rate at which he would translate his Dollar earnings to Can $, thus making his Can$ returns certain. Similarly, a person raising money abroad may enter a swap-out to fix his total cost of borrowing.

Swaps can also be used in place of option forwards. In the example of a person entering a contract to sell Dollars, with the month of December as the option period (given in the section on option forwards), the same objective can be met through use of swaps. Initially, the customer can sell Dollars forward, maturity December 1. If by the end of November, he realizes that he would be receiving the Dollars only by December 20, he can enter a buy-sell swap for 20 days. This way he would be able to hedge his position in a cheaper way. Of course, for resorting to a cheaper method, he would have to pay the price of not knowing the premium/discount that will be applicable to the swap transaction till he enters it. Hence, while option forward is likely to be more expensive than a swap transaction, it removes the exchange risk completely. On the other hand, in such

situations the risk is not completely removed in a swap transaction, due to the uncertainty of the total cost of hedging.

The most important players in the swap markets are the banks. They use the swap markets to hedge their positions arising from merchant transactions. For example, if a bank sells more spot dollars than it has purchased, it creates a short (oversold) position. If the bank does not cover its open position, it may lose if the dollar appreciates since it will have to buy the dollar at a higher price. To cover its position, bank can buy dollars in the interbank spot market. A bank having a long (overbought) position can cover itself by selling dollars in the interbank spot market. But if the bank has sold forward more dollars than it has bought forward (or vice-versa), it will have to cover its position in the interbank forward market. While it is easy to find counterparty in the spot market, it is difficult to find counterparty with an exactly opposite exposure having a matching maturity. Hence, the banks prefer hedging by using swaps instead of outright forwards. Another reason for banks preferring swaps is that swaps have finer rates than outright forwards. A bank having an overbought forward position will enter a swap to sell forward in the relevant maturity and buy the currency spot. Then the bank can sell the currency spot to counter the spot buying. Conversely, a bank with an oversold forward position can enter a sell-buy swap, whereby it buys in the relevant forward maturity and sells spot. To cover the spot sale, it can buy spot in the interbank market. In the interbank markets, the delivery week for the forward leg of the swap can be specified. Banks generally use rollovers to cover the resultant intra-week exposures.

The difference in the spot and the forward leg prices of a swap are given as swap points, just as in the case of a forward quote. In fact, the swap points applicable to outright forwards and swaps are the same. Yet, the way in which these points are to be added to/subtracted from the spot rate is different from the way in which the forward rate for a currency is calculated. The way to calculate the exchange rate applicable to the forward leg of a swap transaction is shown in the following example.

Assume that the following quotes are available in the inter-bank market:

₹/$: 64.83/87
3-m : 60/70

Suppose, a bank wants to go for a buy-sell swap. It will buy dollars spot @ ₹ 64.83/US$. (As the bank would be dealing in the interbank market, it would have to buy at the ask rate. This needs to be remembered for the subsequent workings also). As the swap points are in low/high order, the dollar is at a premium. The bank will get 60 points premium if it sells dollars forward. To arrive at the rate applicable to the forward leg of a swap transaction, the relevant swap points are added to/deducted from (depending on whether the currency is at a premium or discount) the rate at which the spot leg of the transaction has taken

place. Hence, the rate for the forward sale will be ₹ 65.47/US$ (64.87+0.60). As we can see, the rate which the bank gets for selling dollars in the forward leg of the swap is better than what it would have got had it sold dollars outright forward (64.83 + 0.60 = 65.43).

If a bank wanted to go for a sell-buy swap, the rate applicable to the spot sale would have been ₹ 64.83/US$. The dollar being at a premium, the bank would need to pay the 70 points premium for buying dollars forward. In accordance with the above-mentioned principle, the rate applicable to the forward leg would be (64.83 + 0.70) ₹ 65.53/US$. This rate is again better than the outright forward rate of (64.87 + 0.70) ₹ 65.57/US$.

Since the swap points are added to/deducted from the specific spot rate which is used for the spot leg of the swap, the spot rate does not really matter (as the real profit or cost of the swap is reflected in the swap points, which remain the same irrespective of the spot rate used). In fact, in many cases, the rate applied to the spot leg of the swap transaction may not equal either the bid or the ask rate of the bank's spot quote.

A forward-forward swap can be considered as a combination of two spot-forward swaps. For example, a swap to buy dollars after three months and to sell dollars after four months can be taken as a combination of two spot transactions – (a) to sell dollars spot and buy them after three months, and (b) to buy dollars spot and sell them after four months. Identical rates are applied to the spot legs of both the swaps, and hence the spot transactions cancel out. The forward legs of the two swaps remain, and the premium/discount applicable to these decides the net profit/cost of the forward-forward swap.

6.6 Settlement Dates

The settlement date of a forex transaction, also called its value date, is the day on which the transaction is settled by a transfer of deposits as explained in an earlier section. The settlement date for a spot transaction is generally the second *business* day from the date of the transaction, except for transactions between the US dollar and the Canadian dollar, and those between the US dollar and the Mexican peso. In these two cases, the settlement takes place the next business day. This gap between the transaction date and the settlement date is needed to enable the banks to confirm and clear the deals through the communication networks.

The term business day implies that neither of the days between the transaction date and the settlement date (including the settlement date) should be a holiday, either in any of the settlement locations, or in the dealing location of the market-making bank (i.e. the bank who gave the quote). The settlement locations are the countries whose currencies are involved in the transaction, and the dealing locations are the countries in which the banks involved in the transaction are located. For example, if a German bank sells Mexican peso against Canadian

dollars to an Indian bank, Mexico and Canada would be the settlement locations, while Germany and India would be the dealing locations. In case any of the following two days is a holiday in either of these locations, the settlement date is shifted to the next business day.

According to these rules, a transaction entered on a Monday would be settled on the following Wednesday (assuming that both Tuesday and Wednesday are working days in both the settlement locations and the dealing location of the market-making bank). Following the same rules, a transaction entered on a Thursday would be settled on Monday, Saturday and Sunday being holidays in most of the countries. To avoid credit risk, both the parties turn over their deposits on the same day as a rule. The exception is made in case of transactions involving any of the mid-east currencies. These countries have their weekly off on Friday and have Saturdays and Sundays as working days. So, if a deal is struck on a Wednesday involving any of these currencies against, say, the franc, the franc deposit will be turned over on Friday, while the mid-east currency will be transferred on Saturday. For a deal struck on Thursday, the mid-east currency deposit will be transferred on Saturday, while the francs will be transferred on Monday.

The settlement date for a forward contract depends on two things – the settlement date for a spot transaction entered on the same date as the forward contract, and the maturity of the forward contract in months. For arriving at the settlement date for a forward contract, first the settlement date for the corresponding spot transaction is calculated, and then the relevant number of calendar months is added to it. For example, if a 3-month (or 90 days) forward contract is entered on July 20, first the spot settlement date will be calculated (in accordance with the previously specified rules). If that comes to July 23 because of July 21 being a holiday, then the settlement date for the forward contract will be October 23. If it is a holiday on that day, the settlement date will be shifted to the next business day, i.e. October 24. By adding ‘calendar months’ it is meant that the specified number of months will be added to the spot settlement date, not 30 or 31 days (or the multiples thereof). Suppose the spot settlement date is the last date of a month, then the settlement date for the forward contract will be the last date of the relevant month, irrespective of the number of days in the two months. For example, if a one-month forward contract is entered on January 29, the spot settlement date would be January 31. The settlement date for the forward contract would be February 28 (or February 29 if it is a leap year). One important point that must be remembered while rounding off the settlement date due to holidays, etc. is that the rounding off should not shift the settlement date to the next calendar month. For example, if the settlement date of the forward contract is coming to October 31 which is a holiday, the settlement cannot be done on November 1. In such a case, the settlement date will be shifted to the previous business day. So, the settlement date would be October 30.

The maturities of forward contracts are generally in whole months. Yet, banks generally stand ready to offer forward contracts of maturities in accordance with the specific need of the client. This quite often gives rise to contracts with broken-date maturities. For example, a bank may enter a forward contract to deliver a specified number of dollars to a client after 55 days. For calculating the settlement date of such a contract, first the relevant number of whole months is added to the spot maturity date. Then out of the total maturity of the forward contract, the number of days which represent these whole months (which is obtained by multiplying the number of whole months by 30) are deducted. The balance number of days are then added to the settlement date, which was arrived at by adding the whole months to the spot settlement date. Let us say, the transaction date for the 55-day forward contract is October 25. The corresponding spot value date will be October 27. There is one whole month in 55 days. So, one month will be added to October 27 to get November 27. Then 30 will be deducted from 55, leaving a balance of 25 days. When added to November 27, this gives us December 22, which will be the settlement date for the 55-day forward contract.

6.6.1 Short-Date Contracts

As said in the previous section, the settlement date for a spot transaction is two business days after the transaction date. There are some transactions which are an exception to this rule, i.e. where the settlement date is less than two business days after the date of the transaction. Such transactions, for which the settlement date is before the spot settlement date, are referred to as short-dated contracts.

These transactions can be in the form of either outright contracts or swaps. The various swaps available in the market are: between today and tomorrow (called the cash/tom, C/T; it is also referred to as the overnight swap, O/N), between today and spot day (cash/spot, C/S), between tomorrow and next day, i.e. the spot day (tom/next, T/N or tom/spot, T/S) and between spot and the next day (spot/next, S/N). Strictly speaking, the S/N is not a short-date contract since the settlement does not take place before the spot day.

As in the case of swaps, the interbank market gives swap points for these contracts. A bank buying a currency should pay the higher of the swap points as premium, and gets the lower of the swap points as discount. On the other hand, a bank selling a currency to the market will get the lower of the premium points, but will have to pay the higher of the swap points if the currency is at a discount. Here again, the spot rate to/from which these points are added/subtracted becomes irrelevant.

6.6.2 The First Quote

At the start of the day, when a bank is required to give the first quote, the dealer must consider many factors which affect the exchange rate between two currencies. The foremost would be the previous night's closing rate. That rate

would serve as the starting point, which would be adjusted for expected changes on account of other factors.

The most important factor is the expected demand-supply position in the market on that day. This factor reflects the effect of several other factors. For example, at the beginning of a day, there are certain expectations regarding the inflow and outflow of a foreign currency. The prevalent interest rate in the domestic economy reflected by the call money market rates also affects the expected demand and supply, as investors' demand for the domestic currency (and hence for the foreign currency) would depend on the level of domestic interest rates (higher the rates, more the demand for the domestic currency as investors would need to buy it for investing in the local call money markets. If the investors choose to cover their positions in the forward exchange market, it would also result in an increase in the supply of the domestic currency in the forward market, thereby increasing the forward premium on the foreign currency). The demand-supply position would also be affected by the expected happenings in the stock markets.

Let us say Foreign Institutional Investors (FIIs) are expected to unload their holdings in the domestic stock market. This would leave them with surplus funds, which they would need to convert into foreign currency to be able to invest elsewhere, thus increasing the demand for the foreign currency. The overnight rate is adjusted according to the demand and supply position expected to prevail in the market on that day. If the supply is expected to exceed demand, the rate is revised to be on the lower side. If the supply is expected to be less than the expected demand, the rate is revised to be on the higher side.

In addition to these factors, the bank's own overnight position as to whether it is net long in the foreign currency or is net short, also affects the quote it gives to the market. A net short position would result in the bank trying to buy the foreign currency, and hence a higher rate. A net long position will have the opposite effect on the quote.

The bank's view regarding the cross-currency market would also affect the bank's quote. For example, if the bank expects the Dollar to firm up in the international markets and hence goes long on the Dollar there, it would need to go short on Dollars in the local market to set off its position. In such a case, the bank would need to give a lower Rupee/Dollar quote than it would otherwise have given, to be able to sell Dollars.

There are many economic and other factors in addition to the ones mentioned above, which would affect the first quote. All these listed factors and other factors which are likely to influence the exchange rates would need to be considered by the dealer giving the day's first quote. Whether the dealer's analysis is in line with the market's analysis or not, will be made clear by the buy or sell orders he receives from the market. If the dealer's quote is out of line with the market's expectations, he may have to change his quote accordingly.

6.6.3 Rollover, Rolling Forward, and Rolling Backward

Funds settlement of a currency against another currency in the foreign exchange market involves three basic processes: execution, clearing, and settlement. During the execution stage, a willing buyer enters into an agreement to buy an underlying currency pair from a willing seller in a legally enforceable transaction. The interim process between execution and settlement is 'clearing' which is either through a bilateral clearing or central clearing. In the central clearing mechanism, a third party – clearing house - is involved to clear the trades.

Let us take an example:

ICICI Bank bought USD 1 million from SBI at ₹69.15 spot delivery. Assume ICICI holds USD Nostro account with Bank of New York Mellon and SBI holds Nostro account with Bank of America. As the underlying currency is USD, both ICICI Bank and SBI had operated through their respective correspondent banks in the US. Hence, USD 1 million is centrally cleared through the Reserve Bank of India (RBI).

In the aftermath of the global financial crisis of 2008, governments the world over are mandating central clearing system. This would enable the governments to determine the magnitude of systemic risk exposure of domestic financial institutions on their national economy.

During the clearing process, transactions are recorded and updated for sufficient margin as they need to be marked-to-market (closing price of the day) daily. Finally, in the settlement phase, the actual exchange of the currency pair happens along with the title on the settlement date also known as the payment date. If the currencies originate from North American countries, the settlement for a spot contract would be on T+1 basis (i.e., trading day + 1 day). On the contrary, for the currencies outside of North America, foreign exchange markets follow a T+2 settlement cycle for a spot transaction.

For example, when a currency trader deals with a currency pair (say $ against €) to buy or sell, it remains an open position. He/she is buying $ and selling € while the other party is selling $ and buying €. Most of such positions get closed out (are reversed/squared off) intra-day itself as currency markets are predominantly speculative in nature. Open positions that are carried overnight need to be settled after T+1 or T+2 depending on the currency location through exchange of currencies.

As the underlying pair of currencies does not carry the same interest rates, rollover involves interest earned or paid for holding an overnight spot position. If you hold a long position in the currency that carries higher interest rate than the ones who had short position, you would be earning a positive roll. Alternatively, if you hold a short position in a currency that carries higher interest than the ones you had gone long position, then you would have to pay rollover.

Clearing Corporation of India (CCI) Rules for Rollover:

Whenever a customer seeks extension (read: rollover) of a short-term/long-term forward contract, the existing contract shall be cancelled (at T.T. Selling or Buying Rate as on the date of cancellation), and will be rebooked only at current rate of exchange. The differential amount (between the contracted rate and the cancelled rate) is recovered from/paid to the customer at the time of extension. However, such a request for rollover should be made on or before the maturity date of the contract.

To determine the rollover rate, a currency trader needs three inputs:

a. Position size
b. Underlying currency pair
c. Interest rates for each of the currencies

The calculated value based on the aforementioned inputs offers a ballpark estimate of the probable rollover rate. The actual rollover rate, however, will be somewhat different as the central bank rates are only indicative rates and the rollover is market-driven. Let's look at an example of how to estimate the daily rollover cost (SGD/USD 0.82):

1. Position size is 10k
2. SGD/USD currency pair long
3. 2.5% annual SGD rate, 3.5% annual USD rate
    - Earn 10,000 SGD X 2.5% = 250 SGD annually. SGD 250/365 = 0.6849 SGD at rollover
    - Pay 8,200 USD X 3.5% = 287 USD annually. $287/365 = 0.7863 USD
    - Convert SGD 0.6849 interest earned to dollars. 0.6849*0.82 = 0.5616 USD
    - Subtract amount earned from amount paid = 0.5616-0.6849 = -0.1233 USD (rollover cost)

The rollover rate estimate would simply be the long currency interest rate less than the short currency interest rate. The currency trader in the above example would have paid a debit to hold that position overnight. There are forex strategies designed to earn interest daily which is known as carry trading strategies.

Here is another scenario where a currency trader earned a positive roll on the overnight position. The trader wanted to buy AUD because they felt it would appreciate and decided to trade it against GBP.

Here is an example to short 10k (GBP/AUD 0.8):

1. 10k lot position size
2. GBP/AUD currency pair short

3. 2.5% annual AUD rate, 0% annual GBP rate
   - Earn 10,000 X 0.8 = 8,000 GBP X 2.5% = 200 AUD annually. AUD 200/365 = 0.5479 AUD at rollover
   - Pay 10,000 X 0% = 0 GBP annually.
   - Convert AUD 0.5479 interest earned to GBP0.3287/0.8 = 0.68GBP
   - Subtract amount earned from amount paid = 0.68-0 = 0.68GBP (rollover gain)

Rolling Forward and Rolling Backward:

If the payment day of a transaction happens to be a non-business day, the settlement is pushed forward or backward depending on the circumstances of the case. This is known as rolling forward and rolling backward. Normally, transactions are rolled forward to the next business day. But occasionally, if we were to roll it forward it would fall into the next calendar month. Hence, it would be rolled backward. For example, companies that pay salaries to the staff on the last working day of every month may choose to pay one day before (and not later) if the last day of the calendar month happens to be a holiday.

In the currency markets, more often than not one of the currency pair is the USD. However, there are occasions where it would be a non-USD pair necessitating the intervention of the USD (resulting in the need for a third currency).

The rules applicable for arriving at the spot value date (i.e., rolled forward or backward) are as follows:

a) Determining the spot value date for USD-based currency pairs:

   Preliminary spot value date is selected upfront by adding the number of settlement convention days (+1 or +2) to the trade date, following the quoted currency's holiday calendar. According to the USD holiday calendar, if this spot value date is a not a business day then the spot value date is the first good business day on both the quoted currency and the USD calendar following the initial spot value date. If the contract is for three months, then the three-month maturity date is selected by adding three calendar months to the spot value date.

b) Determining the spot value date for non-USD based cross pairs:

   We need to take into cognizance all the three currency calendars (quoted currency, base currency, and USD). Firstly, a preliminary spot value date is selected from the latter of the quoted/USD and base/USD. Then the spot value date is the first business day of the quoted currency, base currency and USD calendars following the preliminary spot value date.

c) Determining the maturity date of a one month contract (be it option or future):

If the spot value date happens to be on the last date of the month, then the maturity date is the following month end. If such date is a non-business day according to the holiday calendar of the quoted currency, USD or base currency (if different from USD), the date is rolled backwards to the previous good business day. The month end of a currency pair is the last business day of a month, according to the holiday calendar of the two legs (plus USD calendar if it is a cross rate).

If the spot value date is not on a month end, then the maturity date is selected by adding one calendar month to the spot value date. If such date is a non-business day according to the holiday calendars of the quoted currency, USD or the base currency (if different from USD), the date is rolled forward to the next good business day.

In case of early delivery or extension or cancellation of forward contract, rule 6 of FEADAI Rules will be applied.

General

i. At the request of a customer, unless stated to the contrary in the provisions of FEMA, 1999, it is optional for a bank to:

a) Accept or give early delivery, or

b) Extend the contract.

ii. It is the responsibility of a customer to effect delivery or request the bank for extension / cancellation as the case may be, on or before the maturity date of the contract.

Early delivery

If a bank accepts or gives early delivery, the bank shall recover/pay swap difference, if any. Interest on outlay/inflow of funds for such swaps shall also be recovered / paid as per Rule 6.

Extension

Foreign exchange contracts where extension is sought by the customers shall be cancelled (at an appropriate selling or buying rate as on the date of cancellation) and rebooked simultaneously only at the current rate of exchange. The difference between the contracted rate, and the rate at which the contract is cancelled, shall be recovered from/paid to the customer as per Rule No. 6.4. Such request for extension shall be made on or before the maturity date of the contract.

Cancellation

i. Recovery/ Payment of Loss / Gain

a) In case of cancellation of a contract at the request of a customer (if the request is made on or before the maturity date) the Authorised Dealer shall recover / pay,

as the case may be, the difference between the contracted rate and the rate at which the cancellation is effected.

b) The process of recovery of exchange difference on cancellation of forward contracts on or before the maturity date will be as follows:

• The recovery can be either in lump sum or in installments.

• Repayment period should not extend beyond the maturity date of the contract.

• The repayment installments should be uniformly received over the remaining maturity of the contract and its periodicity should be at least once in a quarter.

c) The banks should have Board approved policy to deal with recovery and payment of exchange difference and other charges on above lines. The details should be made available to the customers transparently on upfront basis.

ii. Rate at which cancellation is to be effected

iii. Notwithstanding the fact that the exchange contract between the customer and the bank becomes impossible for performance, for whatever reason, including Government prohibitory orders, the exchange contract shall not be deemed to have become void and the customer shall forthwith apply to the Authorised Dealer for cancellation, as per the provisions of earlier paragraphs (i) and (ii) above.

iv. a. In the absence of any instructions from the customer, vide para 6.1(ii), a contract which has matured shall be cancelled by the bank within the period of not exceeding three working days after the maturity date, as per the policy of the respective bank.

Swap cost/gain

a) Purchase contracts shall be cancelled at TT selling rate of the contracting Authorised Dealer

b) Sale contracts shall be cancelled at TT buying rate of the contracting Authorised Dealer

c) Where the contract is cancelled before maturity, the appropriate forward TT rate shall be applied.

Swap cost, if any, shall be recovered from the customer under advice to him.

When a contract is cancelled after the maturity date [refer Para (a) above], the customer shall not be entitled to the exchange difference, if any, in his favour of the customer, since the contract is cancelled on account of his default on the part of the customer. The customer shall, however, be liable to pay the exchange difference, against him. Banks may pass the exchange gain provided it is satisfied that the contract became overdue as client could not give cancellation instructions on account of factors which were beyond the control of the client. Such instances, along with specific justification, shall be kept on record by the Bank.

i. In all cases of early delivery of a contract, swap cost shall be recovered from the customer, irrespective of whether an actual swap is made or not. Such recoveries should be made either back-ended or upfront at discretion of the bank.

ii. Payment of swap gain to a customer may be made at the beginning or at the end of swap period as per the bank's own policy in this regard.

Outlay and Inflow of Funds

Authorised Dealer shall recover interest on outlay of funds for the purpose of arranging the swap, in addition to the swap cost in case of early delivery of a contract.

If such a swap leads to inflow of funds, interest shall be paid to the customer. Funds outlay / inflow shall be arrived at by taking the difference between the original contract rate and the rate at which the swap could be arranged.

The rate of interest to be recovered / paid and the threshold limit for the same may be determined by banks as per their policy in this regard.

In case of early delivery of 'Optional Delivery Date Forward Contract' interest on inlay/outlay of funds should be calculated up to the date for which the Swap is done, on account of early delivery.

Illustration 6.1

Extension as on due date

You, as a banker, booked a forward contract for USD 4,00,000 at ₹ 65.5200 covering a TT remittance against a bill for collection and covered yourself in the local interbank market at ₹ 65.5650. However, on the maturity date your customer requested you to extend the contract by one month.

Assuming the on-going market rates for US dollar are as under:

Spot rate USD 1 : ₹ 65.6925/7075

1 month forward : ₹ 700/800

2 months forward : ₹ 1000/1100

3 months forward : ₹ 1300/1400

What will be the extension charge the customer must pay if you require an exchange margin of 0.05% for TT buying and 0.07% for TT selling rate?

Solution

The forward purchase contract will be cancelled at the TT selling rate for US dollar	= ₹ 65.7075
Less: Exchange margin at 0.07% (65.7075 x 0.0007)	₹ 0.0459
	= ₹ 65.6616

Dollar bought from customer under original contract at	₹ 65.5200
It is sold to him under the cancellation contract at	₹ 65.6616
Exchange difference per dollar payable by customer	₹ 0.1416
Exchange difference for USD 4,00,000 is ₹ 4,00,000 x 0.1416	₹ 56,640
So, ₹56,640 will be recovered as cancellation charges from the customer.	
The banks will book a fresh forward purchase contract for the customer at the rate given below:	
Spot rate for buying dollar in the interbank market	₹ 65.6925
Add: One month premium	+ ₹ 0.0700
	₹ 65.7625
Less: Exchange margin at 0.05% (65.7625 x 0.0005)	– ₹ 0.0329
Forward TT buying rate for dollar	₹ 65.7296
On extension, ₹ 56,640 will be recovered as cancellation charges from the customer and the fresh contract will be booked at ₹ 65.7296.	

Illustration 6.2

The bank entered a forward contract with its customer on 15th March for US dollars 5000 @ ₹ 64.6500 delivery due on 15th June. It covered itself in the market at ₹ 64.6025. Calculate the extension charges recoverable from the customer assuming the following rates in the interbank market on May 5.

Spot	USD 1 = ₹ 64.1300/1400
Spot/ May	64.2300/2425
Spot/June	64.6300/6425
Spot/July	64.9300/9500

Exchange margin 0.10% on buying as well as on selling.

On Cancellation The forward purchase contract will be cancelled at the forward sale rate for delivery in June.	
Interbank forward selling rate	₹ 64.6425
Add: Exchange margin at 0.10%	₹ 0.0646
	₹ 64.5779
Rounded off, the rate applicable is ₹ 64.5780	
Bank buys dollars under original contract at	₹ 64.6500
It sells under the cancellation contract at	₹ 64.5780
Difference per dollar payable by customer	**₹ 0.0720**

Exchange difference for USD 5000 payable by customer is ₹ 360 (i.e., US dollars 5000 @ ₹ 0.0720)	**₹ 360.0000**
On Re-booking: The forward purchase contract will be re-booked with delivery on July 15. Since forward dollar is premium, the forward margin will be rounded off to lower month of June.	
Forward market buying rate for June	₹ 64.6300
Less: Exchange margin at 0.10%	₹ 0.0646
	₹ 64.5654
Rounded off the rate quoted will be ₹ 64.5650	
Summary The bank will recover ₹ 360 from the customer and re-book the contract at ₹ 64.5650 per dollar.	

6.7 Quotes for Various Kinds of Merchant Transactions

There are different kinds of purchase and sale transactions in the retail market. The simplest is the outward or inward remittance. In this kind of transaction, the bank must simply receive or send a currency through Telegraphic Transfer (TT), Demand Draft (DD), Postal Order (PO), or Mail Transfer (MT). Since the work involved in such transactions is the least, a bank offers better rates for them. These rates are called the TT buying and TT selling rates. While the TT selling rate is applied for outward remittances in foreign currency (not being proceeds of import bills) and to cancellation of an earlier booked forward purchase contract, the TT buying rate is applied to inward remittances and for cancellation of a forward sale contract.

In India, TT buying and selling rates must be determined in accordance with FEDAI rules. These rates are to be based on the base rate which may be derived from the on-going market rate. This base rate is marked up to cover the dealer's margin (profit). The maximum permissible margin was earlier prescribed by FEDAI. Now it is left to the discretion of the ADs, subject to restrictions on the maximum spreads and other provisions relating to the calculation of exchange rates as specified by FEDAI. Bank managements generally specify the guidelines to their ADs in this regard. The ADs are also restricted from loading too high a margin by the competition that exists in this field. The margins prescribed by FEDAI which are now indicative are:

TT purchase 0.025% to 0.080%

TT sale 0.125% to 0.150%

The maximum permissible spreads between the TT buying and TT selling rate are as follows:

US$: 1.00 percent of the mean rate (the mid-rate)

Pound, Yen, France Euro, Swiss Franc, Dutch Guilders, and Australian Dollars: 2.00 percent of the mean rate.

Other currencies: No limit at present but ADs are instructed to keep the spread to a minimum.

The TT rates are to be arrived at in the following manner:

Spot TT Buying Rate

Take the base rate and deduct the appropriate margin from it. For example, if the base rate for Dollars is ₹ 63.27 and the AD wishes to charge 0.08% margin, the spot TT buying rate would be:

Base rate	63.27
Less: [22]Margin @ 0.08%	0.051
Spot TT buying rate	63.219

Spot TT Selling Rate

Take the base rate and add the appropriate margin to it. For example, if the base rate for Dollars is ₹ 65.59 and the AD wishes to charge a margin of 0.08%, then the TT selling rate would be:

Base rate	65.59
Add: Margin @ 0.08%	0.052
Spot TT selling rate	**65.642**

Forward TT Buying Rate

Take the base rate. Add (deduct) the on-going forward premium (discount) to (from) the base rate, depending upon the delivery period. From this, deduct the appropriate margin. For example, if a customer wants to sell Dollars one month forward, with the base rate at ₹ 63.27 and one month premium on Dollar being 15 Paise and the AD wishes to charge a margin of 0.08%, the forward TT buying rate would be calculated as:

Particulars	**₹**
Base rate	63.27
Add: Premium	0.15
	63.42
Less: Margin @ 0.08%	0.05
Forward TT buying rate	**63.37**

[22] When you buy, you want to buy at a rate as low as possible. So you deduct the margin to the base rate and quote. Similarly, when you sell, you want to charge as much high as possible. So you add the margin to the base rate and quote.

Forward TT Selling Rate

Take the base rate. Add (deduct) the on-going forward premium (discount) to (from) the base rate, depending upon the delivery period. To this, add the appropriate margin. For example, with the base rate for Dollar at ₹ 65.59 and the one month forward premium at 20 Paise, the one month forward TT selling rate will be:

Particulars	₹
Base rate	65.59
Add: Premium	0.20
	65.79
Add: Margin @ 0.08%	0.05
Forward TT selling rate	**65.84**

In addition to these rates, the ADs are required to charge the following amounts from their customers for various kinds of transactions:

1. No additional charge for inward remittances for which credit has already been made to the Nostro account of the AD.
2. An additional margin of 0.125% to be charged on the TT buying rate and interest to be recovered from the customer @15% for 10 days' transit period, for inward remittances (for example DDs) where the amount has not been credited to the Nostro account of the AD and the reimbursement must be obtained from the overseas drawee bank (in case of a DD) or the overseas correspondent bank (in other cases).
3. On inward remittances by way of customer's personal cheque, an additional margin of 0.15% on the TT buying rate is to be charged. In addition, interest for transit period of 15 days is to be recovered from the customer at domestic commercial rate of interest.
4. For all foreign currency, outward remittances (not being proceeds of import bills), a minimum flat charge of ₹ 100 is to be made.
5. On all outward Rupee remittances, the charge is to be:

Up to ₹ 10,000	0.25% subject to a minimum of ₹ 10
Over ₹ 10,000	0.125% subject to a minimum of ₹ 25

The second kind of merchant rate is the bill buying and bill selling rate. These rates are applied to transactions in foreign currency denominated bills of exchange. As for TT rates, the bill buying and selling rates must be calculated in accordance with FEDAI guidelines. The base rate is loaded with a margin, which is left to the discretion of the AD. The indicative exchange margins given by FEDAI are:

Bill buying	0.125% to 0.150%
Bill selling (over the TT selling rate)	0.175% to 0.200%

Bill Buying Rate

This rate is applied when the AD is giving the rate for an export transaction. The transaction can be either in the way of realization of a collection bill (where the amount has already been credited to the AD's Nostro account and the AD is only required to convert it into Rupees), or in the form of purchase or discounting of an export bill (where the AD will be providing finance to the exporter till the bill gets collected and then convert the amount received into Rupees). For the first type of transaction, the appropriate margin is deducted from the base rate to arrive at the bill buying rate. For the second type of transactions, the bill buying rate can be arrived at in the following manner. Take the base rate. Add (deduct) the on-going premium (discount) to (from) the base rate, the amount of premium (discount) depending on the notional due date (which includes the remaining tenor of the bill, the normal transit period, and the grace period; the normal transit period and the grace period being specified by FEDAI guidelines). From this, deduct the appropriate margin. This will give the applicable bill buying rate. In addition, the AD will also charge interest from the customer for the credit extended for the period between the purchasing/discounting of the bill and the notional due date.

The bill buying rate can be calculated as follows. Let the base rate for Dollar be ₹ 63.27 and the premium for two months (till the notional due date) be 40 Paise. If the AD requires a 15% margin, the rate will be:

Particulars	₹
Base rate	63.27
Add: Premium	0.40
	63.67
Less: Margin @ 0.15%	0.10
Bill buying rate	**63.57**

In addition, for both kinds of transactions, the AD must charge a commission @ 0.25% subject to a minimum of ₹ 10 as collection charges. The banks have been given the discretion of waiving the commission for an instrument having value up to ₹ 5,000.

Bill Selling Rate

The bill selling rate is applied when the AD is giving the quote for an import transaction. This rate can be arrived at by adding the appropriate margin to the base rate. For example, if the base rate for Dollars is ₹ 65.59 and the AD requires a 0.2% margin over the TT selling rate, the bill selling rate will be:

Particulars	₹
Base rate	65.59
Add: Margin @ 0.15%	0.09
TT Selling rate	65.68
Add: Margin @ 0.2%	0.13
Bill selling rate	**65.81**

The third kind of merchant transaction is the purchase and sale of foreign currency notes and Traveler's Cheques (TCs). The rate applicable to such transactions is calculated in the following manner:

TC Buying Rate

Take the one month forward buying rate given by RBI as the base rate. If the RBI rate is not available, take the on-going market rate. Deduct margin from the base rate @1%. The resultant rate will be the TC buying rate. For example, if the one month forward rate is ₹ 65.55, the TC buying rate would be:

Particulars	₹
Base rate	65.55
Less: Margin @ 1%	0.66
TC buying rate	64.89

TC Selling Rate

Take the TT selling rate and add a margin of 0.5% to it. Adding the margin is optional for the AD. On this gross amount, a commission is added (again at the option of the AD) at a maximum rate of 1%. If the TC is issued against foreign currency remittance, then the commission will be charged @ 0.25%. This gives the TC selling rate. For e.g., if the TT selling rate is ₹ 66.7641 per USD as calculated earlier, the TC selling rate would be:

Particulars	₹
TT selling rate	66.7641
Add: Margin @ 0.5%	0.3338
	67.0979
Add: Commission @ 1%	0.6710
TC selling rate	67.7689

The TC buying and selling rates thus arrived at, may be rounded off to the nearest 5 Paise to get the final TC buying and selling rates.

6.8 Indian Forex Markets

Prior to 1992, the Indian forex market was totally regulated. The value of the Indian rupee was fixed, first in terms of the pound and later the US dollar. This value was revised occasionally when the regulator felt the need. All inward and outward remittances were required to be converted at this rate of exchange. The liberalization of the forex market started in 1992. In March 1992, a dual exchange rate system was put into place. This was known as Liberalized Exchange Rate Management System (LERMS). Two exchange rates were prevailing during this period, one determined by RBI and the other determined by the market. This was the beginning of moving towards a market oriented rate. Under this system, 40% of current account receipts were required to be converted at official rate and the balance could be converted at market determined rates. This was later modified to become the 'Unified Exchange Rate System' which came into effect from March 1, 1993. Under this system, all forex transactions are required to be routed through the Authorized Dealers (ADs) at market determined rates. The RBI also announces its rates (which act as reference rates) based on market rates. As mentioned earlier, only permitted persons can deal in foreign exchange (ADs etc.). Hence, any other person desiring to buy or sell foreign exchange can do so only through these permitted persons, and only for permissible transactions.

On August 18, 1994, RBI announced relaxations on current account transactions and delegated further powers to ADs. They can now allow remittances for various purposes like travel, studies, medical treatment, gifts, and services to the extent specified by RBI under the various provisions of the Exchange Control Manual. From time to time, RBI comes out with rules regarding the various players who can operate in the forex market, the various permissible instruments (like forward contracts, swaps etc.), the conditions in which these instruments can be used, etc. It thus regulates the operations of the market.

Some of the important regulations, and the relevant revised FEDAI guidelines effective from 1st July, 2012 are given below:

Forward Exchange Contracts

In terms of the forward exchange contracts, the following are discussed:

- Can be booked only for genuine transactions and where there is exposure to exchange risk, not for speculative purposes.
- Cannot be booked for anticipated transactions, only for firm exposure.
- Can be booked in the currency in which the importer is exposed to exchange rate or in any other permitted currency, i.e. any freely convertible currency.
- Value of the forward cover should not exceed the value of the goods contracted for.

- The period and the extent of the exposure to be covered is left to the choice of the importer. However, the last date of delivery of the forward contract should not exceed six months from the date of shipment/expected shipment date (in case of contracts booked for covering exports or imports).
- Rollover forward covers are permitted to be booked as necessitated by the maturity dates of the underlying transactions, market conditions and the need to reduce costs to the customers. Each time a forward contract is rolled over, the new contract can be for a maximum period of six months.
- In case of merchant trade transactions (i.e., transactions where some good is imported only to be exported elsewhere, in the same or a refined form), forward contracts will have to be booked simultaneously for both legs of the transactions or for the net amount of expected profit.
- No ready sale or purchase should be made for a transaction for which a forward contract has already been booked.
- Forward contracts can be cancelled by the party concerned whenever required. The exposure can be covered again by the customer through the same or another AD subject to genuine exposure risk and permissibility of the transaction. However, for non-trade transactions, contracts once cancelled cannot be re-booked. Corporates can rollover such contracts on maturity at on-going rates.
- Forward cover can be taken by resident corporate clients in respect of dividend due to overseas investors who have made a direct foreign investment in India. The cover can be provided only after the board of directors has decided upon the rate of dividend.
- Forward cover can also be taken for foreign currency loans to be raised, any time after the final approval for the loan arrangements have been obtained from RBI.
- For GDR issues, forward cover can be obtained once the issue price has been finalized.
- On each forward sale/purchase contract booked, the ADs are required to charge a minimum commission of ₹ 250 (FEDAI rules).

Other Regulations

In terms of other regulations, the following are discussed:

- Exporters and certain other recipients of forex, at their option, can retain a portion of the proceeds in forex in a foreign currency account opened with ADs in India. This account is known as Exchange Earners' Foreign Currency (EEFC) deposit.
- Cross currency exposures can be covered in the overseas market through ADs, without necessarily covering the rupee/dollar leg of the transaction.

- All actual out of pocket expenses of the bank such as postage, telex charges including those of the corresponding bank shall be recovered from the customer.
- R – Returns are required to be submitted by ADs to the Exchange Control Department of RBI – pertaining to the transactions in foreign exchange, and in rupee with overseas banks during each fortnight. These returns serve as the principal source of information for compilation of BoP data. They also help RBI to check whether the powers delegated to ADs have been correctly exercised.

Activity 6.2 How do 'Forwards' differ from 'Swap' markets? Elucidate the progress and the process of forward exchange contracts regulated in the Indian forex transactions. **Answer:**

6.9 Convertibility

Conversion of one currency to another currency is required in all international transactions whether it is short-term in nature (current account transaction) or long-term in nature (capital account transaction). The convertibility of the currency in each economy takes place within certain rules and regulations of the law of the land.

The government headed by P V Narasimha Rao which took over office on July 21, 1991 inherited a crisis driven economy. The situation of the balance of payments was precarious. Inflation reached double digits with a disastrous effect on the poorer sections of the society. International confidence in India weakened which resulted in reduced capital inflows. The oil crisis further aggravated the already worsening balance of payments. The immediate recourse was to draw on the facilities of the International Monetary Fund (IMF) with its conditions. However, the government went a step further and initiated a few very bold reforms in a phased manner. These reforms included introduction of partial convertibility of the Rupee, liberalization of export-import policy, reduction of tariff rates, etc.

Convertibility means that a foreign currency can be converted into domestic currency without any restriction and vice versa. Convertibility as defined by Article VIII of the IMF states:

‘‘No member shall, without approval of the fund, impose restrictions on the making of payments and transfers for current international transactions.

Each member shall buy balances of its currency held by another member if the latter, in requesting the purchase, represents:

- That the balances to be bought have been recently acquired as a result of current transactions.
- That their conversion is needed to make payments for current transactions.

The buying member shall have the option to pay either in the currency of the member making the request or in gold.’’

If we look back to the world economy prior to 1945, all domestic currencies were supported by gold reserves, which means that gold was the basis for transaction in different currencies and that each currency could be converted against others at a specified rate. However, with the passage of time, gold standards collapsed and the dollar took its place. Under the dollar standard, countries which pegged their exchange rates to the US dollar were required to keep the actual rate within 1% of the selected parity value. To ensure this arrangement, the central banks had to intervene whenever the market forces caused the exchange rate to cross the allowed range. With the collapse of the dollar standard, the era of floating exchange rates or managed floats dawned in 1972. Though a few futile attempts were made to revive the fixed exchange system, none of them could succeed. Leading economists then started to strive for a final solution to the volatility of the exchange rates. The ‘Louvre Accord’ was signed in 1987 where a decision was taken to shift to the “Managed Float”. As per this strategy, all monetary authorities were to act in mutual co-ordination in order to keep the exchange rates stable in their respective economies even in times of crisis. With the passage of time, even the floating exchange system became outdated as it led to exchange rate instability. Cross-border capital outflows increased, causing economists to start ruminating again on a final solution. They finally realized that to close all such loopholes, the currencies have to be made fully convertible against each other.

A currency is said to be fully convertible:

- When there is no restriction on transactions to be executed between one country and another.
- When both residents and non-residents are allowed to convert their currency holdings into either gold or generally accepted foreign currency with no bar on the amount of currency to be converted.

However, if convertibility is restricted to certain foreign currencies, transactions and / or people, it is termed as partial convertibility. Internal partial convertibility is permissible to residents whereas external convertibility is meant for non-residents.

The first step towards full convertibility typically is to make it convertible on current account and only then move on to convertibility on capital account.

Convertibility on Current Account

The convertibility on current account means that there are no restrictions in transacting foreign currency on current account. In other words, the foreign currency transactions except those for creating or liquidating foreign assets / liabilities are free from any type of restrictions.

With the 1992-93 budget, the partial convertibility on current account (dual exchange rate system) was introduced in India.

It meant:

- 40% of all foreign exchange earnings through exports would be surrendered at the official exchange rate (RBI rate).
- Balance 60% can be sold at market determined rate through the Authorized Dealers in foreign exchange (to be announced on every working day by the FEDAI in consultation with banks). Units in the EPZs and 100% EOUs were the only privileged ones to be permitted to convert 100% of their earnings at the market rate. Due to the special status, already given to the EPZs and EOUs, forecasting had to be changed so as to bring in more transparency.

Full convertibility on current account: The budget of 1993-94 changed the ratio for current account transactions from 40/60 to 0/100 i.e., the exchange rate was unified. This meant that the market rate and the official exchange rate would be the same. In common parlance, it is often termed as achieving full convertibility on current account. However, in reality, it is not so as the RBI's permissions are still required for most of the exchange transactions.

Moreover:

- Authorized Dealers can release amount for current account transaction only up to a prescribed limit.
- Income on NRIs, NRNR account is eligible for repatriation only in a phased manner.
- Debt servicing to the former rupee payments area is not freely repatriable.
- There is no free current account transfer as the dividend balance requirement of the dividends on Foreign Direct Investment in consumer goods sector does not apply.

Making the rupee fully convertible on the current account meant the acceptance of Article VIII of the IMF. It meant that India would have to abide by the conditions imposed by the IMF; refrain from imposing restrictions on the making of payments and transfers for current international transactions; and not engage in multiple currency practices without the approval of the IMF.

The RBI has announced certain relaxations in current account payables in matters relating to:

- Indicative limits on current account payments
- Non-Resident (Non-repatriable) Rupee Deposit Scheme (NRNR)
- Foreign Currency (Ordinary) Non-Repatriable Deposit Scheme (FCONR)
- Repatriation of investment income by non-residents.

Convertibility on Capital Account

Capital convertibility means conversion of rupees into any foreign currency. The currencies could be banked or could be used to acquire assets like real estate, financial instruments, gold jewelry and so on in any foreign country. Foreign nationals will be free to convert their currencies into rupees to acquire such assets in India, and there will be freedom to sell such assets and repatriate funds into any other currency of their choice. Thus, transactions by foreigners in India and by Indians abroad in money market, treasury bills, CDs, bills of exchange and derivatives could be permitted.

In simple terms, free transformation of domestic currency to a foreign currency and vice versa could take place i.e., say one can walk into a bank, submit dollars and demand rupees instead and vice versa.

Integration of our markets with the world markets will mean that Indian investors will have an access to invest in foreign companies which have not set shop in India. Instead of keeping a regular track of the BSE, NSE, OTCEI, Indian investors will be studying the likes of the Dow Jones Index and the Nikkei. Competition will be fierce in the domestic scene as they try to lure the investors. Industries can attract capital from abroad without any restrictions by the authorities.

Benefits of 'Capital Account Convertibility (CAC)'

There are many benefits of CAC for India. To list a few:

i. Rates of return on debt and equity are high in India by world standards. With convertibility, foreign money will come into India to arbitrage this differential away and reduce these rates of return. Thus, the cost of capital for Indian companies in equity and debt financing will drop. The lower cost of capital will make more investment projects viable.

ii. With convertibility, Indians could hold their portfolios internationally. Instead of being constrained only to Indian real estate, equity and debt holdings, they could reduce the risk by diversifying. In case of a bad year here, when Indian assets generate poor returns, foreign assets could continue to generate good returns.

iii. Convertibility will make it possible for Indian firms to interact with Indian households in (say) the markets of the UK. This would provide alternatives

for Indian households and firms, to generate competition for its financial industry and elevate the urgency of reforms in the financial sector.

iv. With convertibility, volatility will rise in the interest rates and in the dollar-rupee, but given the tradition of our governmental control, Indians are used to some cushioning response from the government, i.e., expecting low volatility. This raises the urgency of developing futures and options on interest rates and on the dollar-rupee, which would provide people a method to manage these risks.

Example - Liberalising Foreign Portfolio Investment - Capital Account Convertibility

As per the RBI Deputy Governor, in case of capital convertibility, India has made fundamental shift. This is in view of increased market integration coupled with availability of freer non-residential access to debt. Further RBI has permitted fully accessible route (FAR) on investments from non-residents. In future, most of the securities will fall under FAR category and the non-residents will get unfettered access to government securities.

Capital account convertibility enables conversion of rupees into any foreign currency and convert foreign currencies into rupees, to acquire assets in India.

Source: https://www.thehindubusinessline.com/money-and-banking/capital-account-convertiblity-india-on-the-cusp-of-fundamental-shifts-says-rbi-dy-guv/article36999586.ece dated 14th November, 2021, Accessed on 19th July, 2022

6.10 Exchange Control

All foreign exchange transactions are to be done within the framework of FEMA 1999 (Foreign Exchange Management Act 1999). Every foreign exchange transaction is to be done through an Authorized Dealer only. All Authorized Dealers are required to submit periodical returns to RBI about all the foreign exchange transactions handled by them during the reference period. RBI issues guidelines from time to time on the operational issues related to foreign exchange transactions. These guidelines are called exchange control guidelines. The following paragraphs provide some basic inputs on exchange guidelines. Exchange control refers to the control, by the government or a centralized agency, of transactions involving foreign exchange. Any stipulation or regulation that restricts the free play of forces in an exchange market is termed as the exercise of exchange control.

The origin of exchange control can be traced back to the 1930s. After the World War I, many countries of Europe found themselves with depleted gold reserves and foreign exchange. Therefore, they imposed payment restrictions to prevent massive capital withdrawals and instill stability in the domestic economy. Since then, a number of countries have adopted exchange control systems.

Exchange controls are imposed to stabilize the exchange rates, in order to prevent the fluctuations of the free market rates that are temporary and speculative. The exchange control also aims to keep the currency at a higher value in terms of foreign currencies, so that imports become cheaper and also the external debt may be repaid at a cheaper rate, controlling inflation at the same time. Sometimes, the currency is also undervalued, to stimulate exports through lower prices.

Exchange Control in India

Exchange control was introduced in India on September 3, 1939 at the outbreak of the World War II by virtue of the emergency powers derived under the financial provisions of the 'Defence of India Rules', to conserve the non-sterling currencies and utilize them for essential purposes. In the post-war period, control over the foreign exchange transactions made prudent use of the foreign exchange reserves. Thus, the Foreign Exchange Regulation Act (FERA) was enacted in 1947. It has been replaced by the Foreign Exchange Management Act in 1999.

In India, exchange control is administered by the Reserve Bank of India. The exchange control is related to and supplemented by trade control and it is the responsibility of the Director General of Foreign Trade in the Ministry of Commerce. The exchange control is comprehensive and covers supervision over the settlement of financial transactions relating to exports and imports as well as invisibles and capital transactions.

Transition from FERA to FEMA

The transition from FERA to FEMA was a transition from the era of permissions to regulations. This transition has also taken away the concept of 'exchange control' and brought in the concept of 'exchange management'. In view of this change, the title of the regulation has been changed to ''Foreign Exchange Management Act''.

In order to replace FERA with FEMA, some crucial aspects were to be addressed:

1. Indians who have become foreign citizens should be welcome to invest in their motherland along with the Indian citizens who have become NRIs. Since dual citizenship is riddled with problems, the word ''citizen'' was to be dropped from the Act.
2. The difference between the Income Tax Act, and FERA in respect of 'Indian origin' was to be scrapped.

   FEMA was enacted in response to the dynamic needs of the industry, exporters and importers. Its preamble lays down its objective as to consolidate and amend the law relating to foreign exchange and to facilitate external trade and payments to promote the orderly development and maintenance of foreign exchange market in India. Its emphasis is on the RBI

laying down the regulations rather than granting permissions on a case-to-case basis.

Foreign Exchange Management Act (FEMA)

The much-awaited Foreign Exchange Management Act (FEMA), came into force from 1st June, 2000, amidst eager expectations from all quarters of trade, commerce and industry of the country. FERA, 1973, had several special liberalized features, unlike its more stringent predecessor, FERA. FEMA is a right step towards the liberalization of economic laws in India, which have become inevitable in the current globalized economic scenario. Some of the definitions provided by FEMA are given hereunder.

A) **Capital Account Transaction** is defined as one that alters the assets or liabilities, including contingent liabilities, outside India of persons resident in India or, assets or liabilities in India of persons resident outside India. FEMA classifies the capital account transactions as:

   i. *Prohibited Capital Account Transactions:* Unless, specifically allowed, no person shall undertake or sell or draw foreign exchange to or from an authorized person for any capital account transactions. Persons residing outside India are not allowed to make investment in India, in any form, in any company or partnership firm or proprietary concern or any entity, whether incorporated or not.

   ii. *Permissible Capital Account Transactions:* Any person can sell or draw foreign exchange to or from an authorized person for a capital account transaction specified under, provided that the transaction is within the limit, if any, specified in the regulations relevant to the transaction.

B) **Current Account Transaction** is defined as the one that is not capital in nature and includes payments due in connection with foreign trade, other current business services and short-term banking and credit facilities in the ordinary course of business. It includes payments due as interest on loans and net income from investments. FEMA classifies current account transactions under three categories:

   i. *Banned Transactions:* These are the transactions, which are totally prohibited, and no transaction relating to them can therefore be undertaken.

   ii. *Transactions Requiring Approval from Appropriate Authorities:* These are the transactions that require permission from the appropriate Ministry / Department of the Government of India irrespective of the amount.

   iii. *Transactions Permitted within Prescribed Limits:* These are transactions for which limits have been prescribed and RBI's permission is required - only if the remittance exceeds the limit.

The above definitions will be found useful even in the income-tax proceedings, as the income-tax law has no precise meaning of capital and current account transactions and has left it to judicial interpretation on the basis of facts and circumstances of the case.

FEMA defines an export as taking any goods and provision of services from India to any person outside India. There is also a corresponding definition of import.

Section 2(zb) of FEMA defines *service* to mean service of any description which is made available to potential users and includes the provision of facilities in connection with banking, financing, insurance, medical and legal assistance, chit fund, real estate and so on. It also includes providing entertainment and purveying news or other information. It does not include the rendering of any service free of charge or under a contract of personal service.

The most interesting part of FEMA relates to the definition of a *person resident* in India. FEMA incorporates the inclusive definition of the term person and takes in any agency, office or branch owned or controlled by such a person. Section 2(v) of FEMA is in contrast with Section 2(p) of FERA. FEMA omits the term citizen. Any person residing in India for more than 182 days during the course of the preceding financial year will be considered as a resident of India. The concept of the preceding financial year was not present in FERA.

The definition excludes persons going outside India for employment or for carrying on business, and those who go out with the intention of staying abroad for an uncertain period. A body corporate registered or incorporated in India will be deemed to be resident in India even if a foreigner or non-resident holds its entire share capital. Again, an office, branch or agency in India will be deemed to be resident in India even if it is owned or controlled by a person resident outside India.

FEMA also defines: "Repatriate to India" as bringing into India the realized foreign exchange and the selling of such foreign exchange to an authorized person in India for rupees, or the holding of realized amount in an account with an authorized person in India to an extent notified by the Reserve Bank of India, and includes "use of the realized amount for discharge of a debt or liability denominated in foreign exchange.''

The salient features of the Act are provided in the Appendix –1 at the end.

Example: FEMA Penalty against Amnesty India and its ex-CEO

In July 2022, ₹ 61.72 crore penalty was slapped for allegedly contravening the Indian Forex Act on Amnesty India and its former head. Penalty notice was issued, under the FEMA for ₹ 51.72 crore, and ₹10 crore on the former head

Contd. ....

of the institution. The adjudicating authority of FEMA, on completion of the probe, issued the notice. The main reason for issuing the notice was that huge amount of foreign contribution was made by London based Amnesty International to its Indian counterpart Amnesty India International Pvt Ltd (AIIPL) during November 2013 to June 2018, in the guise of business activities, to escape scrutiny by Foreign Contribution Regulation Act (FCRA). To expand its NGO activities in India, the UK office of Amnesty International was remitting the forex amount adopting FDI route to evade FCRA.

The Foreign Exchange Management Act (FEMA) is a legislation, which regulates the inflow and outflow of foreign exchange and punishes those, who violate the guidelines.

Source- https://economictimes.indiatimes.com/news/india/ed-issues-fema-penalty-notices-to-amnesty-india-ex-ceo-aakar-patel/articleshow/92749708.cms dated 8th July, 2022, Accessed on 19th July, 2022

6.11 Money Laundering

All the financial transactions involve money. Money can be obtained by legal means and also illegal and immoral means. The money obtained by illegal means is called 'dirty money'. The movement of "Dirty Money" is restricted in all economies. One should be aware of monetary transactions that are acceptable under law and that are not permitted under law. Money laundering deals with restrictions related to 'dirty money'.

Wherever 'money' goes, there is always a shadow of 'dirty money' following. This has become an unwritten rule and agenda. If it is printing currency, we have the counterfeit currency problem; if it is savings of money in the bank in the form of cash, we have the unaccounted money savings in some international bank, i.e. the problem of black money. Similarly, when large amounts of money are involved in the form of remittances, (inward or outward) money laundering creeps in.

What is money laundering?

Money can be generated through illegal and illegitimate activities. For example, money generated through drug trafficking or obliging to perform criminal activities or funding terrorist activities. Such illegitimate money is converted to show money obtained through legitimate sources. In the process of conversion, various transactions take place. This is termed as money laundering. This poses a huge problem to any government / central bank (as financial transactions across the globe are controlled by them). It has been a constant, non-enduring effort on their part to check money laundering activities through proper prevention mechanism. Let us now see the PMLA – (Prevention of Money Laundering Act) in India.

To check money laundering in India, RBI has enacted various Acts with amendments made from time to time. The first step towards this is by attracting the attention of Authorized Persons (APs), who are Indian agents under Money Transfer Service Scheme (MTSS). When it comes to money transfer, bank and other ADs come to the forefront of this issue. Hence, to begin with the baby step, 'Know Your Customer' has been made compulsory and mandatory by banks and ADs, in this regard.

Example: Cryptocurrencies to be brought Under Money Laundering

MONEYVAL has come out with its recommendation on stricter regulation of virtual assets, in combating money laundering. Due to technology, increasing use of crypto currency, and emerging virtual assets sector, financial products are made available through internet across the globe. This is creating a major challenge to fight against money laundering.

MONEYVAL (A monitoring body of council of Europe comprising of committee of experts on the evaluation of antimony laundering measures and financing of terrorism) has worked with the Financial Action Task Force (FATF), to enhance their regulatory regime. This has resulted in increasing the standards of international FATF and improve the global compliance to regulate the regulators transnational operations.

FATF Recommendations are recognised, as the global anti-money laundering (AML) and counter-terrorist financing (CFT) standard.

Member states of council of Europe continue to demonstrate a moderate level of effectiveness, combating money laundering and the financing of terrorism and its standards are still below satisfactory level of FATF standards and needs to improve as per the committee.

The money obtained by illegal means and also called dirty money is money laundering and is restricted in all economies. Prevention of money laundering act (PMLA) deals with money inflow related to dirty money.

Source: https://www.coe.int/en/web/moneyval/-/stricter-regulation-of-virtual-assets-and-specialised-gatekeeper-professions-should-be-priorities-in-combating-money-laundering dated 4th May, 2022. Accessed on 20th July, 2022

Know Your Customer (KYC)

For the purpose of KYC policy, a 'Customer' is defined as:

- A person or entity that maintains an account and / or has a business relationship with the bank;
- Person on whose behalf the account is maintained (i.e. the beneficial owner). [Ref: Government of India notification dated February 12, 2010 - Rule 9, sub-rule (1A) of PMLA Rules - 'Beneficial Owner' means the natural person who

ultimately owns or controls a client and / or the person on whose behalf a transaction is being conducted, and includes a person who exercises ultimate effective control over a 'judicial' person];

- Beneficiaries of transactions conducted by professional intermediaries, such as stock-brokers, Chartered Accountants (CAs), solicitors etc., as permitted under the law;
- Any person or entity connected with a financial transaction which can pose significant reputational or other risks to the bank, say, a wire transfer or issue of a high value demand draft as a single transaction.

Activity 6.3
Which regulatory body / Act deals with frauds related to siphoning of funds from India to other countries?
Answer:

Types of Customers

All financial transactions of the customer should be verified by the bank as a part of the Customer Due Diligence requirements (CDD) while opening accounts: This should be in line with the different clauses of the PML Rules, 2005.

Customers are categorized into the following sub-divisions:

a. **Accounts of Individuals:**
   - While introducing a new customer for opening an account, an 'official valid document' stating the name, address, status, along with a photograph, pan card and or Aadhaar card is required.
   - For low risk customers, simplified measures to be adopted for proof of identity and address.
   - For individuals who cannot provide the above, a small account, also known as savings account, wherein the total of all credits in his / her account do not exceed one lakh per year.
   - Inward remittances to normal savings accounts need to be monitored properly. Fresh documents are not required when customers transfer their bank account from one branch to another.

b. **Walk-in Customers:** They are non-account based customers. Their amount of transaction equals or exceeds ₹ 50,000. This can be either through a single transaction or multiple transactions. If the bank has the slightest doubt on the types of transactions, it has to immediately lodge a complaint to FIU-IND (Financial Intelligence Unit, India) under suspicious transaction report (STR).

c. **Salaried Employees:** Apart from the stipulated identification proof, a certificate from the employer of the customer and an official, government approved proof like PAN, driving licence etc. (any one) should be obtained. Generally, such types of customers are limited to be scanned under fraud transactions.

d. **Trust / Nominee or Fiduciary Accounts:** Banks are advised to examine the control structure of the organization, flow of funds from the company, the management responsible for such funds etc., so that such companies do not use opening of such accounts as 'front' account for other activities.

e. **Non-face-to-face customers:** Customers of e-banking and m-banking fall under this category. They fall under high risk customers. Generally, banks ask to make the first payment from an already registered physical account by the customer wherein KYC standards are adhered to.

f. **Politically Exposed Persons (PEPs) resident outside India:** 'Politically Exposed Persons' are individuals who are or have been entrusted with prominent public functions in a foreign country, e.g., Heads of states / governments, senior politicians, senior government / judicial / military officers. Sources of funds for such customers should be vigilantly monitored. Account opening decision is taken at the senior level.

g. **Foreign students:** Procedure to be followed in respect of foreign students: For foreign students studying in India – A normal NRO account based on the information on passport is opened. The local address proof is to be provided by the student within 30 days from the date of opening the account. Prior approval from the RBI is necessary for Pakistan and Bangladesh students.

h. **Accounts of persons other than individuals:** When the customer is a company or an organization: Documents regarding (a) Certificate of incorporation; (b) Memorandum and Articles of Association; (c) A resolution from the board of directors and power of attorney granted to its managers, officers or employees to transact on its behalf and (d) An officially valid document in respect of managers, officers or employees holding an attorney to transact on its behalf are obtained.

i. If it is a **partnership firm** a certified copy of (a) registration certificate, (b) partnership deed and (c) an officially valid document in respect of the person holding an attorney to transact on its behalf.

j. If the customer is a **trust**, one certified copy of the following documents is required for customer identification: (a) registration certificate; (b) trust deed and (c) an officially valid document in respect of the person holding a power of attorney to transact on its behalf.

k. If the customer is an **unincorporated association** or a body of individuals, (a) one certified copy of resolution of the managing body of such association or body of individuals; (b) power of attorney granted to transact on its behalf; (c) an officially valid document in respect of the person holding an attorney to transact on its behalf and (d) such information as may be required by the bank / FI to collectively establish the legal existence of such an association or body of individuals.

l. If the customer is a **proprietary concern**, documents required are (a) Registration certificate / licence issued by the municipal authorities under the Shop and Establishment Act. (b) Sales and income-tax returns. (c) CST/VAT certificate. (d) Certificate / registration document issued by Sales Tax / Service Tax / Professional Tax authorities. (e) Licence / certificate of practice issued in the name of the proprietary concern by any professional body incorporated under a statute. (f) Complete Income-Tax return (not just the acknowledgement) in the name of the sole proprietor where the firm's income is reflected, duly authenticated / acknowledged by the Income-Tax authorities is basically required when the firm seeks any credit facilities. Not necessarily when the account is opened. (g) Utility bills such as electricity, water, and landline telephone bills.

   Under KYC –

   - Information and all relevant details collected from the customer have to be strictly confidential
   - Remittance of funds by the bank should never involve cash payment
   - Financial instruments will not be funded if presented after the due date mentioned in it
   - Banks should ensure that the provisions of Foreign Contribution (Regulation) Act, 2010, wherever applicable, are strictly adhered to.

KYC Policy of the banks are framed incorporating the following four key features which are

a. **Customer Acceptance Policy (CAP):** For this a bank should have:

   - Proper guidelines to be put in place to accept a person as its customer to avoid fictitious accounts

- The risk level posed by every customer to be known. Some customers might come under high level monitoring, for e.g. Politically Exposed Persons (PEPs)
- To avoid opening of the account of a customer whose identity cannot be adequately established
- Conformance to law and practices when allowing one customer to act on behalf of another
- Maintenance of each customer's profile and categorizing them into different levels. For instance, account holders such as jewelers, intensive businesses, NRIs etc. come under high risk category
- Assessment of the risk of ML activities based on the categorization of the customer and the type of services / transactions availed / undertaken by him / her

b. **Customer Identification Procedure (CIP):** The following is the procedure laid down towards CIP -

- The veracity and adequacy of the various proofs given by the customer have to be established for authenticity
- Certain 'mandatory' details should be provided by the customer without fail; all information collected should be kept confidential
- For certain 'typical' types of customers wherein handling their transactions requires extra caution, banks can frame their own internal guidelines for extra safety apart from conforming to the RBI rules
- Unique Customer Identification Code (UCIC) is furnished to every customer to prevent customers opening different accounts with the same bank with different identities
- Undue hardships to low risk customers and opening of accounts by their family members / relatives are to be avoided
- Just proof for identity / address is fine enough for opening an account
- Periodic updating, say once in two years, of KYC is necessary to ensure recording and maintenance of proper documents. This includes obtaining the latest photograph as well.

As per the master circular of RBI vide RBI/2014-15/138 A. P. (DIR Series) circular No.10 dated July 21, 2014 the following operational procedure has to be followed for e-KYC exercise:

- Physical Aadhaar card/ letter issued by the Unique Identification Authority of India (UIDAI) containing details of name, address and Aadhaar number is accepted as an 'Officially Valid Document'. If the address provided by the customer is the same as that on the Aadhaar letter, it may be accepted as a proof of both identity and address.

c. **Simplified KYC norms for Foreign Portfolio Investors (FPIs):** Done in accordance with SEBI guidelines. When the client accounts are opened by professional intermediaries: banks may open 'pooled' account managed on behalf of their clients like mutual funds, pension funds etc. Banks can rely on 'Customer Due Diligence' (CDD) done by the intermediary.

d. **Introduction of new technologies – Credit Cards / Debit Cards / Smart Cards / Gift Cards:** While new technologies pave way for ease of transactions they equally pose a threat for money laundering. Full compliance of all the guidelines of KYC/AML/CFT issued from time to time, both for the primary customer and add-on/supplementary cardholders are a must.

Operation of Bank Accounts & Money Mules

"Money Mule" is a term used to describe innocent victims who are duped by fraudsters into laundering stolen/illegal money via their bank account(s). "Money mules" are recruited by criminals/fraudsters through various technological service methods. However, when such activities are identified, the account of the person is suspended immediately, no doubt, but it also causes tremendous financial loss to the bank. By strictly adhering to KYC/AML/CFT norms issued / amended from time to time, banks can minimize "money mules".

Combating Financing of Terrorism (CFT)

With terrorism being 'outsourced' in our country, it is but indispensable for the banks to take preventive measures to combat funds that flow to support terrorism in our country. In terms of PMLA Rules, suspicious transactions, inter alia, are:

- Transactions that lead to suspicion of funds flowing to illegal / terrorist activities.
- As per United Nations' Security Council Resolutions' (UNSCRs) list that is being circulated to the Indian government from time to time, which separates the list into two categories:

  i. "Al-Qaida Sanctions List" maintained by the UN Security Council 1267/1989 Committee. It includes names of those individuals, groups, undertakings and entities associated with Al-Qaida.

  ii. "1988 Sanctions List": maintained by the 1988 Committee consists of names previously included in Sections A ("Individuals associated with the Taliban") and B ("Entities and other groups and undertakings associated with the Taliban") of the 'Consolidated List'.

  Hence, banks should be highly cautious and not open an account in those names appearing in the above two categories.

a. **Freezing of Assets under Section 51A of Unlawful Activities (Prevention) Act, (UAPA) 1967:** It has been amended by the Unlawful Activities (Prevention) Amendment Act, 2008. This law was enacted to prevent and cope with the funding of terrorist activities through banks. The important features of this enactment are discussed hereunder:

- In terms of Section 51A, the central government is empowered 'to freeze, seize or attach funds and other financial assets or economic resources held by, on behalf of or at the direction of the individuals or entities listed in the schedule to the order, or any other person engaged in or suspected to be engaged in terrorism and prohibit any individual or entity from making any funds, financial assets or economic resources or related services available for the benefit of the individuals or entities listed in the schedule to the order or any other person engaged in or suspected to be engaged in terrorism'.
- On receiving the list provided by the central government, banks should expedite their implementation work prescribed under Section 51A of UAPA in regard to freezing / unfreezing of financial assets of the designated individuals / entities enlisted in the UNSCRs.
- With regard to funds, financial assets or economic resources or related services held in the form of bank accounts, the bank should –
  - ✓ Maintain an electronically updated list and check whether individuals / entities are holding such funds in their respective accounts.
  - ✓ If any such match to a customer account is found or raises doubt, it should be immediately notified, with full details of the customer and his / her account(s) to the Joint Secretary (IS.I), Ministry of Home Affairs, at Fax No.011-23092569 and also convey over telephone on 011-23092736.
  - ✓ A copy of the above should be sent by post to UAPA nodal officer of RBI, Chief General Manager, Department of Banking Operations and Development, Central Office, Reserve Bank of India, Anti Money Laundering Division and UAPA nodal officer of the state / UT where the account is held.
  - ✓ If any such match is confirmed and beyond doubt, all financial transactions of the individual / entity to be severed immediately and above procedures to be done.

b. **Freezing of financial assets:** On receiving particulars from the bank as mentioned above, verification will be conducted by state police and /or the central agencies to confirm the match deciphered by the bank. This is done within five working days. If verification confirms the activity, an order to

freeze these assets under section 51A of the UAPA will be issued within 24 hours. The order need not give prior notice to the individual / entity.

Implementation of requests received from foreign countries under U.N. Security Council Resolution 1373 of 2001:

- U.N. Security Council Resolution 1373 obligates countries to immediately freeze the funds / assets that are used directly or indirectly in support of terrorism.
- The Ministry of External Affairs examines the requests made by the foreign countries and forwards it electronically.
- The UAPA nodal officer of IS-I Division of MHA satisfies itself once again with the legal principles involved.
- Upon receipt of the requests from the UAPA nodal officer of IS-I Division, the list would be forwarded to banks. They in turn freeze the account without any prior notice to the person / entity concerned.

c. **Communication of Orders under Section 51A of Unlawful Activities (Prevention) Act:** All orders under Section 51A of Unlawful Activities (Prevention) Act, relating to funds, financial assets or economic resources or related services, are communicated to all banks through RBI.

Reporting Formats

There are various formats of reporting the various types of transactions through bank accounts. Let us have a brief look on each:

a. **Cash Transaction Report (CTR):** The set of guidelines to be followed by banks are as follows:

- CTR for each month to be submitted to FIU IND by 15th of the succeeding month.
- Occurrence of counterfeit currency transactions to be submitted with a Counterfeit Currency Report (CCR).
- Submission of details of transactions below ₹ 50,000 not required.
- CTR should exclude the internal accounts of the bank. Only cash transactions are to be reported.
- A summary of cash transaction report for the bank as a whole should be compiled by the principal officer of the bank every month in physical form as per the format specified. The summary should be signed by the principal officer and submitted to FIU-India.
- For banks having Core Banking Solution (CBS), a centralized CTR (all branches put together) should suffice.

b. **Suspicious Transaction Reports (STR):** While determining suspicious transactions, the following should be borne in mind by the banks:

- The definition of suspicious transaction as given in PMLA Rules and amended from time to time.
- Attempted but aborted transactions of the customers also should be reported.
- Suspicious transactions include cash and other modes adopted within the banking service framework (cheques, online etc.). All such transactions are to be recorded.
- Reason/s for considering a particular transaction to be suspicious by the bank should be recorded and notified by the principal officer.
- Generate awareness among bank staff while they acquire KYC details or handle AML transactions. The staff should be educated on identifying suspicious transactions.
- As required under PML rules, an identified STR should be kept confidential and allow the customer to operate his / her account. No attempt should be made to tip the customer of their doubts over their account / transaction until legal procedures are in place as mentioned in the last few paragraphs.

c. **Non-Profit Organization:** Transactions exceeding ₹ 10 lakh by a non-profit organisation or an equivalent amount in foreign currency to be reported every month to the Director, FIU IND by 15th of the succeeding month.

d. **Cross-border Wire Transfer:** Cross-border Wire Transfer Report (CWTR) is required to be filed by 15th of succeeding month for all 'Cross Border Wire Transfers' of the value of more than ₹ 5 lakh or its equivalent in foreign currency where either the origin or destination of funds is in India.

Banks are always in the process of educating the customers, educating and training their staff to combat AML. 'Prevention of Money Laundering' is not just a vertical procedure alone but also involves an integrated process wherein all the stakeholders – the central bank, the commercial banks and ADs, customers and the common public, should join hands to combat it.

The remittance markets are facing the emergence of alternatives along- side the already existing alternatives to cash products. Some of the examples are credit or debit card-based payments, mobile transfers etc. Such efficient methods are contributing to the efficient functioning of the remittance market in India strongly supported by compliance with AML/CFT requirements. Financial inclusion can help expand remittance market in India, which will also help the poor and the remittances of unskilled, illiterate labourers. Proper education on banking and technological mechanism is the key to this market.

6.12 Inter Bank Transactions in India

All the foreign exchange transactions in India are dealt by Authorized Dealers only. Hence, all individuals and merchants deal with Authorized Dealers only and in turn ADs buy / sell foreign exchange on behalf of their client base in the inter-bank market. This topic deals with various transactions that can be taken up in an inter-bank market.

The Authorized Dealers' banks quote rates to customers and enter into transactions on the basis of cover rates provided with a permissible amount of profit margin. However, for a transaction to actually culminate in profit, it is necessary for the bank to effect the cover transaction at a rate equal to or better than the base rate. The efficacy of a 'dealing room' lies in the conduct of market operations to maximize the profit realized from difference in rates at which currencies are bought and sold, with minimal risk and within such limits as laid down by the management.

The exchange market in India consists of:

a. Authorized Dealers: Banks authorized to deal in foreign exchange.

b. Reserve Bank of India: To the extent it is available to cover merchant transactions.

c. Overseas banks: To the extent banks in India can deal with them within the framework of the RBI regulations.

Sources of Exchange Rates

Underneath, the sources of exchange rates are discussed:

Reserve Bank of India Rates: The Reserve Bank of India presently announces reference rates on the US dollar for authorized dealers. The RBI also announces spot selling rate for the US$ to cover eligible imports on spot basis only.

Inter-Bank Market Rates: The Indian inter-bank market has a fair amount of activity in US dollar. The rates for other currencies are largely from the 'crosses' obtained from the US dollars. In recent years, the market has also become active in cross currency deals mainly in $/£, $/DM and $/yen.

The market operates through foreign exchange brokers who are accredited by the FEDAI. The broker is not allowed to hold positions and is only expected to obtain and communicate prices to enable contracts between banks. Two way quotes are common and some amount of direct dealing between banks also takes place.

Overseas Market Rates: The rates in the market are necessarily influenced by the rates obtained in the overseas market. The market will constantly endeavor to maintain rates against the rupee for different currencies in alignment with the overseas cross rates obtained. Cross currency trading activity is influenced largely by movements in the overseas markets. Hence the overseas market rates

necessarily play a very significant role in determining the rates in the Indian market.

Reserve Bank of India Regulations on Inter Bank Dealings

The Reserve Bank of India (RBI) is statutorily vested with the authority to determine the manner in which exchange rates are arrived at for merchant as well as inter-bank dealings. It also has authority to regulate the inter bank transactions either directly, by issuing necessary instructions to the banks, or through the Foreign Exchange Dealers' Association of India. The RBI's objective in this direction has been to develop an active foreign exchange market within the country so as to enable a competitive price support for merchant transactions. Towards this end, the RBI's requirements are:

a. Banks are allowed to freely buy or sell any permitted currency both spot and forward, in the inter-bank market in India, against the rupee as also against another permitted currency. The bank should however ensure that at the close of each day, exchange position (the extent of difference between purchases and sales in a foreign currency) is kept square, near square or according to their own risk bearing capacity.
b. Balances held in foreign currency accounts abroad should commensurate with operational needs. Banks are neither allowed to lend nor invest in foreign currencies. However, banks can transfer incidental surpluses in the account on a day-to-day basis to a special interest bearing account with automatic retransfer to their current account wherever such facility is offered by the correspondent.
c. Banks may buy or sell permitted currencies both spot and forward from / to overseas banks, in the general currency area, against another permitted currency provided:
    i. The purchase or sale is in cover of a merchant transaction or an exchange position resulting from an inter-bank transaction with another bank, covering its merchant commitment. Banks should, however, endeavor to minimize resort to overseas markets.
    ii. In their overseas cover transactions, banks should endeavor to obtain cover of a matching maturity. When this is not possible, the resulting mismatch should be rectified as far as possible within five working days.
d. Banks are allowed to sell rupees to overseas banks against permitted currencies on spot basis for funding their rupee accounts in India. The rate quoted should be the composite rate worked out on the basis of inter-bank rate prevailing at that time and the RBI spot buying rate. Surplus rupee funds in the accounts of overseas banks can also be converted to foreign currency by the bank maintaining the account. The RBI has freed stipulations on

overnight limits. It has asked the individual banks to ask for individual bank limits after getting the same duly approved by it.

e. Banks are not allowed to borrow abroad without the specific approval of the RBI. However, general permission has been granted for incidental overdraws provided the sum of overdraws in all the accounts maintained by the bank does not exceed the equivalent of ₹ 2 million. Any excess beyond this limit is to be corrected within 5 days.

Example: RBI allows Payments for Cross-Border Trade in Rupee- A Step Towards Internationalization Of Rupees

The Reserve Bank of India (RBI) has permitted invoicing and payments for international trade in rupees, facilitating greater bilateral business with various countries, promoting the growth of global trade and to support the increasing interest of the global trading community and there by internationalisation of rupees. A greater global trade share for the rupee will help the central bank preserve its foreign exchange, according to forex dealers. Authorized banks will require prior approval from the central bank, to deal in international payments in ₹.

All the foreign exchange transactions in India are dealt by authorized dealers (ADs) and individuals, and merchants deal with ADs (Bankers), who buy/ sell foreign exchange, on behalf of their client base, in the inter-bank market.

Source: https://www.business-standard.com/article/finance/rbi-s-rupee-trade-settlement-a-step-towards-internationalisation-of-rupee-122072001348_1.html dated 20th July, 2022. Accessed on 30th November, 2022

FEDAI Guidelines

The FEDAI guidelines on business hours, export transactions, import transactions, merchant trade, clean instruments, guarantees, exchange contracts, early delivery extension and cancellation of forward contracts are hereby discussed. However, the guidelines on merchant trade, clean instruments, exchange contracts and early delivery, extension and cancellation of forward contracts are taken up in an exhaustive manner. It is advisable to refer to the FEDAI manual and the NABHI's Foreign Exchange Manual for further reference.

FEDAI Rules (10th EDITION) are effective from 1st April, 2019. FEDAI has provided 8 rules in its 10th edition. Rule 6 on early delivery etc. was given in page 97 and rest of the guidelines were provided below.

Rule 1 Business hours

The normal market hours for FCY/INR transactions in Inter-bank forex market as well as client transactions in India would be from 9.00 a.m. to 5.00 p.m. IST on all working days. Authorised dealers may undertake customer (persons resident in India and persons resident outside India) and inter-bank transactions

on all working days beyond normal market hours. For the purpose of Foreign Exchange business, Saturday will not be treated as a working day except for defined transactions. "Known holiday" is one which is known at least 3 working days before the date. Transactions with persons resident outside India, through their foreign branches and subsidiaries may also be undertaken on all working days beyond normal market hours. However, value cash transactions may be undertaken only up to 5.00 pm IST, except in case of individual person (including joint account or proprietary firm). Transactions, including value cash transactions, for individual persons (including joint account or proprietary firm) can be undertaken even on Saturdays, Sundays and holidays as per banks internal policy. Any transaction undertaken beyond the market hours prescribed bank must ensure that. NOOP (No Operations) Limit is maintained all the times [including transactions executed from EOD to 9.00 am IST (market opening time) next working day]. Spot date roll over for FCY/INR transactions will take place at 12.00 midnight IST. A holiday that is not a "known holiday" is defined as a "suddenly declared holiday".

Rule 2 Exports

Post shipment Credit in Rupees

a) Application of exchange rate

Foreign currency bills will be purchased/discounted/negotiated at the Authorised Dealer's current bill buying rate or contracted rate. Interest for the normal transit period and/or usance period shall be recovered upfront simultaneously.

b) Crystallisation and Recovery

i) Authorised Dealers should formulate own policy for crystallisation of foreign currency liability into rupee liability, in case of non-payment of bills on the due date.

ii) The policy in this regard should be transparently available to the customers.

iii) For crystallisation into Rupee liability, the Authorised Dealer shall apply its TT selling rate of exchange. The amount recoverable, thereafter, shall be the crystallised Rupee amount along with interest and charges, if any.

iv) Interest shall be recovered on the date of crystallisation for the overdue period at the appropriate rate; and thereafter till the date of recovery of the crystallized amount.

v) Export bills payable in countries with externalisation issues shall also be crystallised as per the policy of the authorised dealer, notwithstanding receipt of advice of payment in local currency.

c) Realisation of Bill after crystallisation

After receipt of advice of realisation, the authorised dealer will apply TT buying rate or contracted rate (if any) to convert foreign currency proceeds.

d) Dishonour of bills

In case of dishonour of a bill before crystallisation, the bank shall recover:

i) Rupee equivalent amount of the bill and foreign currency charges at TT selling rate.

ii) Appropriate interest and rupee denominated charges.

Application of Interest

a) Rate of interest applicable to all export transactions shall be as per the guidelines of Reserve Bank of India from time to time.

b) Overdue interest shall be recovered from the customer, if payment is not received.

Within normal transit period in case of demand bills and on/or before notional due date/actual due date in case of usance bills, as per RBI directive.

c) Early Realisation

Normal Transit Period

In case of early realisation, interest for the unexpired period shall be refunded to the customer. The bank shall also pay or recover notional swap cost as in the case of early delivery under a forward contract. Interest on outlay / inflow of funds for such SWAPS shall also be recovered / paid as per Rules.

Concepts of normal transit period and notional due date are linked to interest rate on export bills and to arrive at due date of the bill/export credit.

Normal transit period comprises the average period normally involved from the date of negotiation/purchase/discount till the receipt of bill proceeds.

It is not to be confused with the time taken for the arrival of the goods at the destination. Normal transit period for different categories of export business are laid down as below.

a) Fixed Due Date

In the case of export usance bills, where due dates are fixed or/are reckoned from date of shipment or date of bill of exchange etc., the actual due date is known. Therefore, in such cases, normal transit period is not applicable.

b) Bill drawn on DP/At Sight Basis and not under Letter of Credit (LC)

(i) Bill in Foreign Currencies – 25 days

(ii) Bills in Rupees not under Letter of Credit – 20 days

AD Bank may apply transit period that varies (higher or lower) from the above prescribed NTP for exceptional situations based on historic data for specific exporter/overseas buyer/supply destination and mode of transportation etc. Any deviation from the above prescribed NTP should be documented with rationale for such deviation.

In case of extending finance beyond above prescribed NTP, maximum period is restricted up to 90 days from the date of shipment.

AD Bank should be responsible to demonstrate the document relying upon which the facility of post-shipment export finance provided for extended/reduced NTP period. No changes in due date shall be permitted subsequent to the purchase, discounting or negotiation of export bill.

c) Exports to county under United Nations Guidelines – Max. 120 days

d) Bills drawn in Rupees under Letters of Credit (L/C)

i) Reimbursement provided at centre of negotiation - 3 days

ii) Reimbursement provided in India at centre - 7 days

Different from centre of negotiation

iii) Reimbursement provided by banks outside India - 20 days

iv) Exports to Russia where reimbursement is provided by RBI - 20 days

e) TT reimbursement under Letters of Credit (L/C)

i) Where L/C provides for reimbursement by electronic means - 5 days

ii) Where L/C provides reimbursement claim after certain number of days from the date of negotiation - 5 days + this additional period

Substitution/Change in Tenor

a) In case of change in the usance of a bill, interest on post shipment credit shall be charged to the customer, as per internal guidelines of respective bank. In addition, the bank shall charge or pay notional swap difference. Interest on outlay/inflow of funds for such swaps shall also be recovered / paid as per Rule 6 para 6.6.

b) It is optional for banks to accept delivery of bills under a contract made for purchase of a clean TT. In such cases, the bank shall recover/pay notional swap difference for the relative cover. Interest on outlay/inflow of funds for such swaps shall also be recovered/paid as per Rule 6 para 6.6.

Export Bills sent for collection:

a) Application of exchange rates

The conversion of foreign currency proceeds of export bills sent for collection or of goods sent on consignment basis shall be done at prevailing TT buying rate or the Fx contract rate, as the case may be. The conversion to Rupee equivalent shall be made only after the foreign currency amount is credited to the Nostro account of the bank.

b) On receipt of credit advice/statement of Nostro account and compliances of guidelines, requirements of the Bank and FEMA, the Bank shall transfer funds for the credit of exporter's account within two working days.

c) If the above stipulated time limit is not observed, the Bank shall pay compensation for the delayed period at the minimum interest rate charged on

export credit. Compensation for adverse movement of exchange rate, if any, shall also be paid as per the compensation policy of the bank.

Rule 4 Clean Instruments

Outward Remittance

Outward remittance shall be affected at TT selling rate of the bank ruling on that date or at the FX contract rate.

Encashment or Sale of foreign currency notes and instruments

Foreign currency travelers' cheques, currency notes, foreign currency in prepaid card, debit/credit card will be encashed or sold at Authorised Dealer's option at the appropriate buying or selling rate respectively ruling on the date and time of encashment or sale.

Payment of foreign inward remittance

Foreign currency remittance up to certain amount, as per uniform policy of respective bank, may be converted immediately, for their own customer in to Indian Rupee if all information required for crediting the remittance to beneficiary account is available and there is no instruction to the contrary. Remittance in excess to such certain amount shall be executed in foreign currency or can be converted to other currency/(ies) with due intimation to or consent from, the beneficiary.

The applicable exchange rate for conversion of the foreign currency inward remittance shall be TT buying rate or the contracted rate as the case may be.

Compensation for delayed payment

Authorised dealers shall pay or send intimation, as the case may be, to the beneficiary in two working days from the date of receipt of credit advice / Nostro statement. On receipt of disposal instruction complying with guidelines, required documents from the beneficiary, the Bank shall transfer funds for the credit of beneficiary's account immediately but not exceeding two business days from date of such receipt.

In case of delay, the bank shall pay the beneficiary interest @ 2% over its savings bank interest rate. The bank shall also pay compensation for adverse movement of exchange rate, if any, as per its compensation policy specifying the reference rate and date applicable for calculating such exchange loss.

In case, the beneficiary does not respond within five working days from receipt of credit intimation as above and the bank does not return the remittance to the remitting bank, the bank shall initiate action to crystallize the remittance:

a. Bank notifies due action to the remitting bank and the beneficiary

b. Bank shall crystallize the remittance within certain period as per their policy, not exceeding the time allowed for surrendering of foreign currency under any Stature or Regulation or RBI Directions.

Rule 4.5 amended vide AR Circular No. 04/2020 date 2nd November 2020

4.6 Transfer of funds between Vostro Accounts with two banks (w.e.f. 1st April 2013)

i The bank carrying out interbank Vostro transfer by RTGS should mention in the "Remark" column of the RTGS message, a statement to the following effect – "We undertake to send form A3 separately".

ii It is decided to fix time limit of 5 working days for receipt of form A3 at beneficiary bank's end. Delay beyond 5 days would attract penalty on the remitting bank.

iii In case, beneficiary bank does not get form A3 within 5 working days, they must lodge a claim with the remitting bank within 15 days, from the date of transfer of funds. Remitting bank should ensure that Form A3 reaches the beneficiary bank promptly thereafter.

iv Remitting bank would be required to pay beneficiary bank penalty at the rate of Rs. 1000/- per day for the period in excess of 5 days from the date of transfer of funds, till the form A3 reaches the beneficiary bank.

v If beneficiary bank lodges the claim after 15 days from the date of transfer of funds, the claim amount will be capped at Rs. 10,000/-

vi In case of any dispute between the banks, the matter may be referred to FEDAI. FEDAI will appoint a sub-committee of 3 members from the Managing Committee and give directions to the parties concerned.

Rule 5 Contract amounts

Exchange contracts shall be for definite amounts and periods. When a bill contract mentions more than one rate for bills of different deliveries, the contract must state the amount and delivery against each such rate.

5.2 Option period of delivery

Unless the date of delivery is fixed and indicated in the contract, option period may be specified at the discretion of the customer subject to the condition that such option period of delivery shall not extend beyond one month.

If the fixed date of delivery or the last date of delivery option is a known holiday; the last date for delivery shall be the preceding working day.

In case of suddenly declared holidays, the contract shall be deliverable on the next working day. Contracts permitting option of delivery must state the first & last dates of delivery.

For example, 18th Jan to 17th Feb, 31st Jan to 29th Feb 2016.

"Ready" or "Cash" merchant contract is deliverable on the same day.

"Value next day" contract shall be deliverable on the working day immediately succeeding the contract date.

A spot contract shall be deliverable on second succeeding working day following the contract date.

A forward contract is a contract deliverable at a future date, beyond Spot Date. Duration of the contract being computed from spot value date at the time of transaction.

5.3 Place of delivery

All contracts shall be understood to read "to be delivered or paid for at the Bank" and "at the named place".

5.4 Date of delivery

Date of delivery under forward contracts shall be:

In case of bills/documents negotiated, purchased or discounted - the date of negotiation/purchase/discount and payment of Rupees to the customer.

However, in case the documents are submitted earlier to, or later than the original delivery date, or for a different usance, the bank may treat it as proper delivery, provided there is no change in the expected date of realisation of foreign currency calculated at the time of booking of the contract. No early realisation or late delivery charges shall be recovered in such cases.

ii. In case of export bills/documents sent for collection date of payment of Rupees to the customer on realisation of the bills.

iii. In case of retirement/crystallisation of import bills/documents - the date of retirement/ crystallisation of liability, whichever is earlier.

5.5 Option of delivery

In all forward merchant contracts, except NDDC, the merchant, whether a buyer or a seller, will have the option of delivery.

Rule 5.5 amended vide AR Circular No. 04/2020 date 2nd November 2020

5.6 Option of usance

The merchant purchase contract should state the tenor of the bills/documents. Acceptance of delivery of bills/documents drawn for a different tenor will be at the discretion of the bank.

5.7 Merchant quotations

The exchange rate shall be quoted in direct terms i.e. so many Rupees and Paise for 1 unit or 100 units of foreign currency.

5.8 Rounding off Rupee equivalent of the foreign currency

Settlement of all merchant transactions may be effected by rounding off rupee amount or in actual paise, as per the banks own policy.

Rule 7 Intermediaries

Exchange brokers, Multi Bank Portals (MBP), Electronic Order Matching Systems (EOMS) are some of the commonly used intermediaries in foreign exchange markets. While such intermediaries were earlier accredited by FEDAI, from 05 October, 2018, FEDAI will continue to be the accrediting agency for Exchange Brokers (Voice) only. Electronic Trading Platforms viz. MBPs and EOMs will require to obtain authorisation from RBI. ETPs existing and operating on or before the commencement of these directions shall make an application for authorisation within a period of six months from the date of issue of these directions. An existing ETP Operator may continue to carry on the operations till disposal of its application by the Reserve Bank granting or rejecting the letter of authorization. Authorised Dealers shall use the services of intermediaries accredited by FEDAI/RBI. No brokerage, fees, charges or any other form of remuneration shall be paid by the Authorised Dealers to other bank employees on any foreign exchange contracts.

Rule 7.1 amended vide AR Circular No. 04/2020 date 2nd November 2020

7.2 Accredited intermediaries will conform to the rules, conditions and the code of conduct laid down by FEDAI from time to time. FEDAI may review the working and standing of accredited intermediaries from time to time. Any accredited intermediary who conducts any business contrary to the rules of FEDAI may have his accreditation withdrawn and no Authorised Dealer shall transact any business with him thereafter.

7.3 It shall be the duty of each Authorised Dealer and the associations of Exchange Brokers (Voice) to report to FEDAI, the name of an intermediary who suggests, proposes or transacts any business which is contrary to the rules of FEDAI.

7.4 Reporting Changes

Any changes in regard to the constitution or address or any other material change in respect of an Exchange Broker (Voice) shall be advised to FEDAI promptly for necessary approval. Exchange Brokers (Voice) shall also report changes in the calling assistants, key employees, managers to FEDAI.

7.5 Contracts Notes/Confirmations

All contracts/confirmations/advices in relation to foreign exchange business must bear the clause “Subject to the Rules & Regulations of the Foreign Exchange Dealers’ Association of India.”

No foreign exchange contract shall be made with an intermediary as a principal. A bank must refuse to give delivery to or take delivery from any party other than the declared principal – an authorised dealer.

Rule 8

Issues of delays in payments of funds in any currency (including Indian Rupee) in settlement of foreign exchange contracts are dealt in this rule.

Considering the technological advances in processes of payments and reconciliation of accounts, it has become far more speedier to detect non-delivery of funds. Banks are expected to track delivery of funds, note discrepancies if any, and take corrective actions expeditiously and efficiently.

8.2 Interest for delayed delivery

In the event of late delivery of any currency (including Indian Rupee) in foreign exchange contract, interest for the number of days of delay (regardless of the causes for delay) shall be payable by the seller-bank. The interest for the overdue period shall be payable at the rate of 2% over the benchmark rate of the currency concerned. The benchmark rates for the currencies are listed below:- 1. INR 2. STG 3. USD 4. EUR 5. JPY 6. CHF 7. CAD	- FBIL MIBOR overnight rate - Base rate of Barclays Bank - Prime Base rate of Citibank NA - Marginal Lending Facility rate of European Central Bank - Prime rate of Bank of Tokyo-Mitsubishi UFJ Ltd. - 3 month rate of Swiss National Bank - Prime rate of Bank of Nova Scotia

In case of transactions in currencies not mentioned above, the seller bank shall pay interest at 2% over notional overdraft rate payable by the buyer bank.
The rate of interest applied would be the average rate based on rates on each day of delay.

8.3 Acceptance of back valued credit

In case, the seller bank is willing to rectify the situation of late payment, by offering to deliver funds on value dated basis, the buyer bank shall accept such funds, provided the funds are delivered within two working days from the due date of the contract. In case, funds are delivered beyond two working days from the due date, it will be the choice of the buyer bank to accept-

(a) Value dated funds
or
(b) Claim interest as per para 8.2 above.

8.4 Time Limit for claim for delay

The claim for the delay in receipt of funds by the buyer bank should be made within 15 working days from the due date of the contract. The seller bank in such a case shall be liable to pay interest for the full period of delay.

If the claim is not made within 15 working days, the interest will be payable by the selling bank for the maximum period of 60 days only.

8.5 Time Limit for settlement of claim

The selling bank has to settle the claim (with interest for overdue period, as above) within 15 working days from the date of receipt of claim.

If a claim is not settled within 15 working days, the seller bank will be required to pay interest at the rate mentioned in 8.2 above for the entire overdue period. The cap of 60 days for interest payment as mentioned in 8.4 above will not apply in such cases.

8.6 Deliberate default

In case the claim is not settled within 60 days from the date of lodgment of claim, the matter may be referred to FEDAI for final decision, which shall be binding on both the banks concerned.

The matter would be examined by the Managing Committee of FEDAI or any other Sub-Committee appointed for this purpose by the Managing Committee. The said committee of FEDAI will decide about penalty on the defaulting bank.

8.7 Wrong delivery of funds

In case, a seller bank delivers funds to the account other than the notified account of the buyer bank, it shall compensate the buyer in terms of the above rules.

8.8 Use of incorrectly paid funds (undue enrichment)

A bank which has received funds, not intended for its accounts, shall be liable to compensate the bank which has been out of funds by either:

1. Returning the funds with proper value, provided charges for back valuation are borne by the original remitting bank, or

2. Returning the funds with interest that is earned, less charges, if any.

8.9 Settlement Date Change

a) if the Maturity Date of an FX contract falls on a month end and the said day is declared as a holiday subsequently, the settlement should be pre-poned to preceding working day, if the said day is “known holiday”. b) In all other cases, if the maturity date is declared as a holiday subsequently, the settlement date should be postponed to the next working day.

8.10 Notice for Option Delivery

In case of interbank forward contract, that allows option of delivery, the buyer bank shall take up such forward contract after giving a notice of 2 working days to the seller bank.

8.11 All the member banks who deal in Forex Forward should become & retain membership of CCIL's Forex Forward Guaranteed Settlement segment. All interbank Forex Forward contracts should be subjected to the CCIL's Forex Forward Settlement segment.

Rule 8.11 amended vide AR Circular No. 04/2020 date 2nd November 2020

8.12 Change in expiry date of Option contracts

a) When expiry date of an option contract falls on a "known holiday", expiry date is pre-poned to the previous working day. b) If an option expiry date falls on a "suddenly declared holiday", the expiry date should be postponed to the next working day. Original delivery date, or for a different usance, the bank may treat it as proper delivery, provided there is no change in the expected date of realisation of foreign currency calculated at the time of booking of the contract. No early realisation or late delivery charges shall be recovered in such cases.

i In case of export bills/documents sent for collection - date of payment of Rupees to the customer on realisation of the bills.

ii In case of retirement/crystallisation of import bills/documents - the date of retirement / crystallisation of liability, whichever is earlier.

8.13 Option of delivery

In all forward merchant contracts, except NDDC, the merchant, whether a buyer or a seller, will have the option of delivery.

Rule 5.5 amended vide AR Circular No. 04/2020 date 2nd November 2020

8.14 Option of usance

The merchant purchase contract should state the tenor of the bills/documents. Acceptance of delivery of bills/documents drawn for a different tenor will be at the discretion of the bank.

8.15 Merchant quotations

The exchange rate shall be quoted in direct terms i.e. so many Rupees and Paise for 1 unit or 100 units of foreign currency.

8.16 Rounding off Rupee equivalent of the foreign currency

Settlement of all merchant transactions may be effected by rounding off rupee amount or in actual paise, as per the banks own policy.

6.13 Dealing Room Operations

Forex market is over the counter-market in which currencies are bought and sold against each other. The market is basically characterized by – no physical presence, huge size, dominated by financial flows, deep, highly liquid and

efficient, preponderance of inter-bank flows, sleek being screen-based, highly volatile 24 hours a day market, and yet a profit center with simultaneous potential for losses. These transactions are done by the foreign exchange dealers.

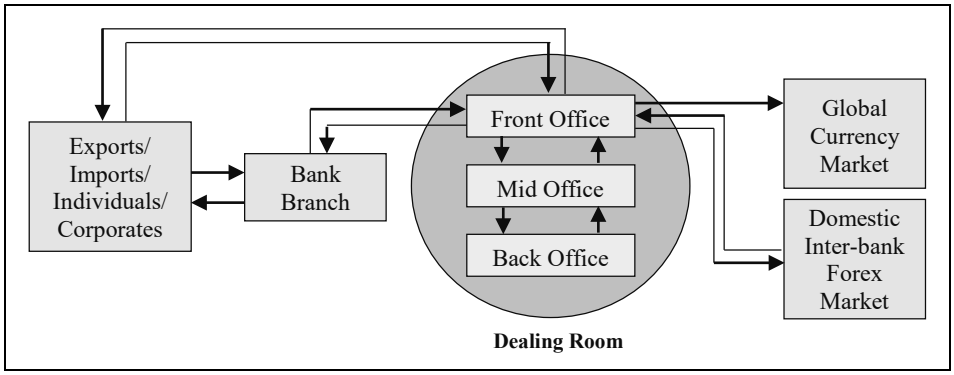
This topic deals with organizational structure of 'dealing room' in general.

Dealing Room

A 'dealing room' is a centralized establishment, usually of a commercial bank, which is willing to offer a two-way dealing price for different currencies at all times even when they may not wish to deal, all but during the prescribed business hours. It is a common practice amongst dealers to quote only the last two points of the rate as every dealer is expected to know the full price. A dealer tries to make profit while quoting his / her rate rather than attempting it from the quote made to him / her. Sometimes dealer seeks the quote from other banks to assess the trend. These dealers often quote taking a spread in such a way that the other party will not be in position to take any position. At times, the dealer also prefers to qualify his/her quote with words like "good for standard lots", "choice price", etc. To sum up, the whole range of transactions in the forex market are carried out through the dealing rooms of the participating banks.

Figure 6.3 depicts an example to it.

Figure 6.3: Forex Dealing Room Set-up



Source: http://karpuramanjari.blogspot.in/2014/07/forex-markets-dealing-room-operations.html

Banks trading actively in the forex market and offering a variety of products usually segregate their trading activities into:

Front office – Dealing room

Mid-Office – Risk management, Accounting policies and MIS

Back-Office – Settlement, Reconciliation and Accounting

Front offices are equipped with 'Electronic Data Processing' systems matching volumes of business undertaken. These systems ensure automatic recording of

trading date, time and transaction serial number with no scope for the dealers to alter the same. These systems usually are multi-user type so that positions of various dealers can be consolidated and results can be obtained. The 'Chief Dealer' can login to any part of the system to see the overall totals.

A large 'Dealing Room' is controlled by a 'Chief Dealer', who may not actually deal himself/herself. He/she is responsible for implementing management policies. He/she leads morning discussions with his/her junior dealers on forecasts and strategies for the day, before the dealing actually begins. Usually, he / she would be responsible to assess the effectiveness of dealers working under him / her as also to guide them in their day-to-day business transactions. Senior dealers work under him/her and are individually responsible for a group of currencies / a major currency / spot forward trades.

A dealer is supposed to be endowed with traits *viz:*

- Survival instincts
- Good understanding of the changing nature of markets
- Quick to react to new opportunities and situations
- Quick in reversing a previous stance
- Overcome the natural tendency to salvage something from a loss- making situation
- Predict/ guess as to what the market will do next rather than standby his/her own view; and
- Able to work under stress

To be effective, a dealer has to be trusted in the forex market. He / she can very quickly gain a reputation as a good or bad dealer.

Dealers will involve in the accounting work. Once the deal is recorded, the deal slip indicating the details like the name of the broker, if any, the counter-party bank, currency, amount, time, rate and due date under their signature will be sent to backup department for further processing.

However, in an automatic system, separate "deal slips" are redundant.

Some 'Dealing Rooms' do maintain gadgets like voice recorders, etc., to record the 'Dealing Room' conversations for speedy resolution of differences.

Mid-office / Back-office of a 'Dealing Room' constitutes the accounting department, plays an equally important role by providing operational support.

It undertakes:

- Obtaining confirmation of contracts from counter-parties; check contents of contracts and signatures thereon; rectify the effects on the same day
- Obtaining stamped agreements from the counter-parties and keep record of computer generated confirmation slips
- Evaluation of monthly profit and loss
- Submission of daily currency position
- Maintenance of positions and funds registers
- Preparation of rate-scan reports and enquiries into wide variations, if any, in the deals struck from the on-going market rates

Objectives of Dealing Room Operations

The foreign exchange transactions are handled by dealers. And they do the trades on behalf of the clients – buy or sell operations. The main participants of these transactions are individuals / firms / corporates / banks / central banks / market makers.

The following are some of the points related to operational issues of the 'dealing room' to be followed by its various participants:

- To give the best possible service to customers –
- Through adequate number of well attended phones and telex operations, sound counsel is provided about economic development, competitive rates and capability to transact the entire amount of currency deal requested by the customer
- To manage the bank's position so that inventory in each foreign currency is kept at the desired level
- The above objective is achieved by matching the inflows and outflows of various currencies with matching deployment
- To produce a profit for the bank while accomplishing the first two objectives
- The same is achieved through exchange rate differentials, etc.

Participants

The major participants in forex markets are the clients (corporates, firms and individuals) on one side and the market makers – banks and the central bank of the country, in our case the RBI.

The following explains the activities that are generally taken up by various participants (corporates /firms /individuals /banks) in the forex market.

Corporates / Firms / Individuals

- To pay for imports, convert of export receipts, hedge receivables and payment of interest and principal amounts of foreign currency loans
- Giant multi-nationals do take speculative positions purely for profit generation through their own well-established treasury / dealing room

Commercial Banks

- 90% of the world forex trade is accounted for by inter-bank transactions
- Trade in currencies to meet client requirements
- Merchant transactions are less than 2%
- Buy and sell on their account and carry inventory of currencies for speculative purposes since foreign exchange trading profits have become an important source of revenue for commercial banks.

Central Banks

- Intervene to move exchange rates in a particular direction as desired by the local government

Market Makers

Major commercial banks act as 'Market Makers' in most of the major currencies by offering "two-way" quotes and are prepared to take either side of the transaction.

– In a normal two-way market, a dealer expects "to be hit" on both sides of his/her quotes in roughly equal amounts. But, it is always not necessary. He / she may suddenly find "being hit" on one side of his quote, much more often than the other side. It means that he / she is either buying many more dollars than he / she is selling or vice versa. This leads to the trader building up "a position" –

  If he/she has sold more $ than bought, then he/she is said to have a "short position"

  If he / she has bought more $ than sold, then he/she is said to have a "long position".

– In a highly volatile forex market, a long / short position for too long can be risky.

– For instance, net short position may lead to a loss if it is to be covered at an appreciated price or gain if the currency depreciates.

– Similarly, a net long position may lead to loss if it is to be covered at a lower price or again if it is to be covered at a higher price.

– Therefore, a dealer, realizing that he/she has built up an undesirable net position quickly adjusts his/her bid offer quote in such a manner that it

discourages one type of deal (which has already landed him/her in a over position) and encourages the opposite deal.

Brokers

– Act as middlemen between two market-users.

– They provide information to market-making banks about prices at which there are firm buyers and sellers in a pair of currencies.

– Execute bank's instructions to buy or sell a specific amount of currency at specified rate and collect commission at the conclusion of the deal.

– Acquire information about general state of the market.

In the Indian Context

– Brokers are prohibited from acting as principals and maintaining positions in foreign currencies;

– Brokers' notes should be received promptly by the dealers before the close of the day's business;

– Nomination of brokers for deals not done through them is not permitted;

– It is desirable to have a panel of brokers and air-shuffling of business among them;

– Dealers to be separated from maintaining broker-wise record and payment of brokerage claims, etc.

Trading Mechanism

Inter-bank market deals are done on the telephone. Say, a trader of bank A, needing GBP against dollars, calls his counterpart of bank B, and asks for a quote. If the price is acceptable, a deal is struck and both enter the details – amount bought / sold, the price, identity of the counter-party etc., in their computerized record systems. Later, a written confirmation is sent. On the day of settlement, bank 'A' transfers dollars to bank B and 'B' transfers GBP to A.

However, non-bank customer transactions are entertained during normal banking business hours while inter-bank transactions are carried out up to 4 p.m.only.

Dealing Room Terminology

Some of the repeated expressions in the forex market and their accepted meanings are explained in Table 6.6 below.

Table 6.6: Repeated Expressions in Forex Market and their Accepted Meanings

Jargon used	What it means
Offered at; Comes at; I give at; I sell at; I offer at	Seller or lender of currency
I bid at; I pay at; I take at; I buy at	Buyer or borrower of currency
Bid, Wanted, Firm, Strong	Currency in question is appreciating/in demand / buyers pre-dominant
Offered, Weak	Currency in question is depreciating / sellers pre-dominant
Value today	Same day value
Value tomorrow	Next working / business day
End / end	Forward swaps for maturity on the last working day of the appropriate future month are described as End / end.
Short dates	Deals for a broken number of days up to one week
Brokers / Odd Date	Value date which is not the regular forward date.
Overnight – Today / Tomorrow	Currency deposit transaction / Simultaneous purchase and sale of currency for value today against the next working day.
Tomorrow / Next; Tom / Next	Currency deposit transaction / swap for value the next working day against the spot value.
Spot / Next	Currency deposit transaction / swap for the spot value date against next working day.
Weekend	Currency deposit transaction / swap for value the last working day of the week, normally Friday against the first working day of the following week, normally Monday.
Outright / outright	Purchase or sale of currency for delivery for any day other than spot not being a swap transaction.
Par	Forward price is same as the spot.
Parity or same	No proposition on the rates quoted by the other party. It does not imply that the party using this expression is ready to do a deal at the rates quoted.
For indication / information	Quotes no firm.

Block 2: Foreign Exchange Transactions

Jargon used	What it means
Details	Needs of a dealer regarding rate and dates following a transaction.
Mine	Dealer takes the spot / forward / deposit whichever has been quoted from the counter-party. It is dangerous to use the expression unless amounts have been qualified first.
Yours	Opposite of mine.
Point / pip	Last decimal place of a quotation.
Mio	One million.
Billion / Milliard	One thousand millions.
At your risk	Quote is subject to change.

Source: ICFAI Research Center

Regulatory Framework

To set up a foreign exchange dealing room, banks should obtain "Authorized Dealer" licence from the RBI to trade and maintain positions in the overseas currencies. The banks should obtain approval from Reserve Bank of India for the overnight open exchange position and the aggregate gap limits as per the guidelines contained in the Exchange Control Manual of RBI. In a recent guideline issued by the RBI, the Authorized Dealers were allowed to maintain higher open positions as deemed fit in the context of their foreign exchange operations and being approved by their respective boards. This open position is, of course, subjected to maintenance of the capital adequacy – being 15% of their unimpaired Tier I capital. This could be in the form of foreign currency deposits overseas money market instruments which must be rated at least A1+ by S&P or P1 by Moody's.

The banks should submit the following reports to the RBI:

- Daily statements of foreign exchange turnover in form FTD and gaps position and cash balances in form GPB through a wide area network.
- Monthly statement (in USD million) indicating:
  - Aggregate Gap Limit (AGL) approved
  - Maximum AGL on any day in the month
  - Value at Risk (VaR) limit approved and
  - Maximum VaR on any day in the month

The bank should also submit a report in the form BAL to the RBI explaining all the foreign currency held by it, on a fortnightly basis, within 7 days of the completion of the fortnight.

Payment Systems

Once a deal is finalized, the dealers will specify where they want the currencies to be delivered. For example, in a $-pound transaction, the buyer of the $ may want $ to be credited to his / her account with the New York bank whereas the receiver of the Pound may want it to be credited to his / her account in a bank located in London.

To cope with such mind-boggling volumes, banks have given up the traditional system of settlement through cheques and instead they have developed the electronic inter-bank funds transfer systems. Best known among those are, CHIPS (Clearing House Interbank Payments System (CHIPS) is the primary clearing house in the U.S. for large banking transactions.) in New York and CHAPS (CHAPS is one of the largest high-value payment systems in the world, providing efficient, settlement risk-free and irrevocable payments managed by Bank of England) in London.

Example: Payment through CHAPS

Clearing House Automated Payment System (CHAPS), from March 2020 to end February 2021, settled over £92 trillion of payments. This works out to an average £367 billion every working day. In terms of number of payments, it will 1.74 lakh per day of £2.1 million in value.

CHAPS has not only processed high value transaction but also significant quantum of low value transactions as well. It should be noted that 97 % of payments have been over £1mn and in terms of volume, it was less than £10,000.

CHAPS is one of the largest high-value payment systems in the world, providing efficient settlement, with risk-free and irrevocable payments, managed by Bank of England in London

Source: https://www.bankofengland.co.uk/-/media/boe/files/payments/rtgs-chaps-annual-report-202021.pdf dated 1st July, 2022, Accessed on 20th July, 2022

Basic Documentation

Dealers usually maintain “deal slips” indicating the name of the broker, if any, the counter-party bank, currency, amount, time, rate and the due date under their signature as soon as the deal is struck and pass-on the same to the back office for further processing. However, with the entry of automatic and electronic processing systems, these deal-slips have become redundant.

The banks should use only those documents, which are legally enforceable and effective, while transacting in the market, after consulting with other market participants. The basics of such documents are:

- Confirmations of contracts
- Stamped agreements
- Evaluation report of profit and loss on a monthly basis
- Registers recording positions and funds

However, in our country such online payment / settlement is still in the process of development.

Risks in Dealing Room Operations

The free flow of capital all around the globe and the concomitant rise in volumes, have made the need for risk identification in 'Dealing Room' operations and its management quite imperative.

Managements therefore, formulate policy–guidelines and control mechanism for smooth functioning of the 'Dealing Room', perhaps covering broad parameters *viz*.

- Business strategies for trading in different product groups markets
- Limits for counter parties
- Procedures for measuring, analyzing, monitoring and managing risks
- Ceilings for risk position
- Procedures applicable to situations like over-shooting of limits and market extremities
- Functions and responsibilities of front, middle and back office
- Internal accounting and reporting
- Internal control and monitoring systems
- Maintaining confidentiality

It is also desirable to obtain written acknowledgement of such guidelines from the operating staff of dealing rooms.

Let us take a look at the different types of risks associated with forex dealing.

Open Position Risk

– Long / overbought plus } Bought more GBP than sold

– Short / oversold plus } Sold more GBP than bought

If one is overbought and the currency weakens, one will be able to square the overbought position by selling the currency at a loss. Same is the case if one is oversold and the currency hardens.

For example, a dealer John had bought US$ at ₹ 71.500 expecting US$ will strengthen to ₹ 72.50. However due to heavy US$ inflows into India assume US$ is now quoted at ₹ 69.1500. The dealer has to square off his overbought position by selling at ₹ 69.1500 incurring a loss of ₹ 2.35 on a US$.

Assume that the above dealer bought from another dealer Jack. This dealer is in oversold position. He can buy US$ at ₹ 69.1500 to square his oversold position.

Maturity Mismatch Risk

Gaps arising out of merchant transaction-position-and others. Unmatched forward maturities may cause loss if forward differentials go against the bank.

Credit / Counter Party Risk

Failure of counter party to honor its side of the contract.

Contract risk – Assume one has sold forward $ to a customer say at ₹ 48.55 per $. Before the contract matures, if the customer fails, we have to dispose off the earmarked Dollars in the market at the going rate despite its weakening to ₹ 48.15 per Dollar. This is nothing but 'Replacement Cost'. It is also known as 'Pre-settlement Risk'.

Clean risk – Assume we have sold Euros against $ and accordingly, we have credited Euros with the bank a/c., say in Germany and are waiting for the German bank to deposit Dollars in our New York a/c. Till the German bank credits Dollars in our New York a/c, we will be running 'Clean Risk' and if the bank fails to do so, we have to put up with the loss.

This type of risk, also known as 'Settlement Risk', may arise in international transactions owing to time-zone differences.

Interest Rate Risk

This risk arises owing to adverse movements in implied interest rates or actual interest rate differentials relating to foreign currency deposits, forward contracts, currency swaps, FRAs, etc.

Legal Risk

Defective / unenforceable agreements likely to frustrate the deals.

Operational Risk

Are the omissions / commissions in operational procedures *viz.*

- Dealing and accounting functions:
- Follow up the deal and confirm the contract confirmation
- Settle funds
- Pipeline transactions and
- Overdue bills and contracts are likely to result in losses

Sovereign Risk

Some of the sovereign risks are enumerated below:

– Risk of externalization

– Basically political in nature

– Generally for banks in other countries.

How to overcome / reduce risks

Banks, assessing the risk involved in trading and non-trading activities, usually come up with a well-drafted risk management procedure that could be well understood by dealers, back office staff, etc. Such a mechanism shall assist in limiting and monitoring risk-prone activities across the 'Dealing Room'.

Some of the time-tested mechanisms are:

i. Open Position Risk

– Since these positions are taken at a particular rate, any adverse movement in the rate leads to loss.

– To prevent / minimize such losses, banks prescribe various limits consistent with the capital to undertake such activities.

- Daylight limit – Dealer cannot take a position of more than a day light limit prescribed by the bank.
- Overnight limit – Fixes overnight limit for an open position in each currency. Usually lesser than daylight limits – Global limit for all the currencies put together is also fixed.
- Cut-loss limit – While undertaking transactions, if the rate goes on moving against the bank, one never knows, where the loss would end. Hence, banks fix a cut-loss-limit. Irrespective of the dealer's view, if the rate moves so adversely that the resultant loss is equivalent to the limit the dealer has to liquidate the position and book loss.

All deals done in a day should be accounted for against the corresponding limits. The limits when exceeded should be promptly reported to the senior management and approved.

In the Indian context, pipeline transactions and operations in foreign currency notes need to be specially attended to.

People not connected with dealing room operations should constantly monitor compliance of these limits through timely, accurate and comprehensive MIS.

ii. Maturity Mismatch Risk

- Individual Gap Limit (IGL).
- Limit put on mismatch in the currency bought and sold for a particular month.
- Aggregate Gap Limit (AGL).
- Aggregate of gap limits for particular currency – all the O/B and O/S positions for various months.
- Total Aggregate Gap Limit.
- Aggregate of all the AGLs in all currencies.

iii. Credit Risk

Banks impose exposure limits on customers as well as on other banks. In general, separate limits are fixed for spot and forward, the latter being lower than the spot. In the case of forwards, the limit imposed is the, maximum level of the net outstanding forward contracts.

iv. Operational Risk

- Dealing and execution functions are separated for early discovery of any transgressions of the imposed limits – by dividing dealing room into front office solely concentrating on dealings and back office for recording the transactions and pursuing settlements etc.
- Further confirmation is obtained.
- Prompt follow-up of execution of funds transfer instructions.
- Monitor export bills and forward contracts for their delivery in accordance with the tenor.

v. Legal Risk

- To obviate the risk involved in enforcing compliance with contractual obligations / securities, banks usually enter into the following master agreements with counter-party banks / credits:

- Spot and Forward Exchange – International Foreign Exchange Master Agreement.
- Foreign Exchange Options – International Currency Options Market Agreement.
- All others – International Swap Dealers' Association Master Agreement.
- Banks also obtain specific confirmation for each transaction with full details regarding amount, rate, value date, etc., duly signed by the authorized signatories.

vi. Sovereign Risks

Limits are fixed to overseas parties taking country risks also into consideration.

Reconciliation of Nostro Balances

Reconciliation of Nostro account balances is quite essential to ensure that every transaction undertaken by a Nostro account is correctly executed.

Reconciliation is undertaken through bank statements and mirror accounts. Unreconciled entries must be followed up on an on-going basis or through computerized accounting system and micro-filming procedures practised by overseas / correspondent branches / banks may pose problems for back references.

No set off of debit and credit items of unreconciled entries against write off / appropriation to P & L a/c is attempted, unless permitted by the exchange control regulations and authorized by the bank.

Management of Risks in Vostro Account

Exchange control regulations command close monitoring of funds flow in Vostro accounts with a view to avert hot money flows / speculative dealings on rupees. Similarly, sudden variations in operations say, unusually large operations in an otherwise inactive account, demand closer scrutiny to assess genuineness of the operations.

The amount of credit risk arising from drawings on branches cannot be measurable unless a flow of information regarding paid drafts, etc., from drawee branches to account maintaining office is prompt and accurate.

These risks are minimized by –

- Reducing number of branches on whom drafts can be drawn;
- Imposing drawing limits per day;
- Securing draft advices directly from the correspondents / telex messages of large payment from paying branches;
- Prompt value dating.

Monitoring of Vostro accounts further ensures discipline in the usage of credit lines extended to correspondent banks, identification of concealed overdrafts and interest recovery there-against etc.

Balance confirmation letters are mailed to the overseas banks maintaining Vostro accounts and confirmations are obtained.

Evaluation of Foreign Exchange Profits and Losses

Profits and losses of foreign transactions are calculated at the end of each month, using the prescribed uniform standard accounting procedure.

Forex trading is one of profit centers in the Indian banks after liberalization in the year 1991.

Dealing with Ethics and Code of Behavior

A dealer must be ethical in his/her business. Unless he/she practises some ethics in his/her dealings, he/she cannot earn the trust of the counter-parties to frequently visit him/her and conduct the trades. Some such dealing ethics prescribed by the regulatory authorities are listed below:

- Should act prudently while entering into transactions under any prevalent market conditions. He / she should not assume positions even with management approval, when in good conscience he / she knows that it is of such high risk that jeopardizes the capital of his/her bank or the funds of its depositors.
- Should make sure that he / she complies with his / her management's prescribed policies and limitations and conforms to all legal and administrative constraints.
- Should not spread rumors that could be injurious to the market or any competitor.
- Should offer assistance to competitor banks provided he / she does not jeopardize his / her own institution.
- Should not agree to 'wash names' for any reason.
- Should stand by his / her word in all dealings directly between or through intermediaries.
- Should conduct his / her business in the market-place in accordance with the established procedure, both as to definitive practices and intent of such practices.
- Should maintain the confidentiality of all foreign exchange transactions, whether concluded or not.
- Should not permit brokers to deal on their own account.
- Should not take advantage of an obvious misquote by any counter-party.

- Should always make sure that the dealers in his / her dealing room are properly instructed in the workings of the market and their responsibilities and obligations before being placed in positions of actually dealing in foreign currency.
- Should discourage improper conduct in the market by others.
- Should remember that his / her responsibility is to his / her bank. Any irregularity by others within his / her own dealing room must be reported to the management of bank / Auditors.

Check Your Progress – 2

6. What is a contract that mandates the holder to buy or sell an underlying asset at a set price on a specified date in future?
   a. Options
   b. Forwards
   c. Option forwards
   d. Futures
   e. Swaps
7. What is the rate that is applicable for delivery on the second business day from the date of the contract?
   a. Spot rate
   b. Bid rate
   c. Interest rate
   d. Call rate
   e. Cross rate
8. Calculate the annualized premium if the given spot rate is at ₹ 64.55 and the six months forward is quoted at ₹ 64.95 per dollar.
   a. 1.24%
   b. 1.23%
   c. 2.48%
   d. 2.50%
   e. 3.21%
9. Which of the following is a combination of spot and forward, where the exchange of currencies takes place at pre-determined exchange rates?
   a. Currency swaps
   b. Cross currency
   c. Broken date forward

d. Forward swaps

e. Put option

10. Identify the settlement date for a spot transaction done on 25th August 2016, which is a Friday.

a. 25th August 2016

b. 26th August 2016

c. 27th August 2016

d. 28th August 2016

e. 29th August 2016

6.14 Summary

- There are several intricacies involved in the operations of the foreign exchange market.
- In every forex market around the world, there is a regulatory authority which ensures the smooth functioning of the markets, regulating their operations to varying extent.
- Foreign exchange market is an Over-The-Counter (OTC) market which has no physical market place.
- Foreign exchange market includes various large commercial banks, forex brokers, large corporations, and central banks.
- In the interbank market, currencies are transferred electronically through Nostro account or Vostro account.
- Currency is settled always in the country of its origin.
- The exchange rate quotation indicates the price of a currency in terms of another currency.
- Foreign exchange transactions are classified into spot and forward contracts.
- The settlement date or value date refers to the day on which the transaction is settled by a transfer of deposits.
- The understanding of the operations of forex markets and the regulatory framework is essential for a finance manager who is trying to manage foreign currency risk for his/her firm.
- FEDAI Rules (10th EDITION) are effective from 01 April 2019 and 8 rules were provided in its 10th edition

6.15 Glossary

Ask (Sell) Rate: The rate at which the seller is willing to sell the currency / security / derivative / commodity.

Bid (Buy) Rate: The rate at which the buyer is ready to buy a currency / security / derivative / commodity.

Bid-Ask Spread or Just 'Spread': The difference between the bid rate and ask rate.

Bill Buying Rate: The rate considered when the Authorized Dealer gives the rate for an export transaction.

Bill Selling Rate: The rate considered when the Authorized Dealer gives the quote for an import transaction.

Broken Date Contract: In currency market, the forward contracts mature on the last working day of the month. Contracts are available for first half of the month or second half of the month. Any forward contract with maturity other than these maturity dates, is called a broken contract.

Cross Rate: It is the exchange rate between two currencies calculated by using their exchange rates with a third currency.

Currency Swap: Buy and sell a particular currency against another currency in the same transaction for different maturities. There could be same or different buyers for sale leg and different seller for purchase leg.

Forward Contract or Outright forward in Currency Market: If the contract between the parties involves one party agreeing to buy or sell a currency at a pre-determined future date at a particular price.

Hedging: It refers to a process through which an attempt is made to eliminate the risk.

Interbank Quote: The quote given by one bank to another.

Market Makers provide a two-way quote to the market always.

Merchant Quote: The quote given by a bank to its retail customers.

Nostro Account is a bank's account with a correspondent bank located in a foreign country.

Retail Market: The market in which the commercial banks deal with their clients.

Short-dated contract: When the settlement date of a transaction is less than two business days after the date of transaction.

Spot Transactions: Contracts that are settled on the 2ndbusiness day from the date of contract.

Vostro Account is their account with us. If a correspondent bank has an account with domestic bank that is Vostro account

Wholesale or Interbank Market: The market in which banks deal with each other.

6.16 Self-Assessment Test

1. Explain in detail the structure of forex market.
2. Who are the participants in the forex market transactions? Elucidate.
3. Describe in detail the various kinds of exchange rate quotations.
4. "Forex exchange transactions can be classified based on the time between entering into a transaction and its settlement". Elucidate this statement.
5. Distinguish between forward and swap contracts.
6. Explain in detail the settlement process in forex transactions.
7. How do quotes vary according to different kinds of merchant transactions? Discuss.
8. Analyze and interpret the structure of the Indian forex markets.
9. Give the differences between bill buying rate and bill selling rate.

6.17 Suggested Readings/Reference Materials

1. Francis Cherunilam, International Business - Text and Cases, 6th Edition, PHI Learning.
2. P G Apte (2020), International Financial Management, McGraw Hill Education (India) Private Limited.
3. Vyuptakesh Sharan, International Financial Management [Kindle Edition], 6th edition, PHI Learning.
4. Madhu Vij (2021). International Financial Management – Text and Cases. 4th edition. Taxmann
5. Charles W. L. Hill, G. Tomas M. Hult (2021). International Business. 12th edition. McGraw Hill Education (India) Private Limited.
6. Choel S. Eun & Bruce G. Resnick (2022). International Financial Management. 8th edition. McGraw Hill Education (India) Private Limited.
7. K. Aswathappa (2020). International Business. 7th edition. McGraw Hill Education (India) Private Limited.

6.18 Answers to Check your Progress Questions

1. (a) Large commercial banks

Large commercial banks deal in the market both for executing their clients' (both corporates and individuals) orders and on their own account. They act as the market makers in the forex markets, i.e., they

stand ready to buy or sell various currencies at specific prices at all points of time.

2. (b) Retail Market

The market in which the commercial banks deal with their customers (both individuals and corporates) is called the retail market, while that in which the banks deal with each other is called the wholesale or the interbank market. The size of the deals in the retail market is much smaller than those in the interbank. market.

3. (a) 2

Section 2 of the FEMA 1999 provides the definition for 'Foreign Exchange'.

4. (b) European

A US quote is the number of dollars expressed per unit of any other currency, while a European quote is the number of units of any other currency expressed per unit of dollar. For example, INR 69.87 per dollar is a European quote, while USD 1.2444/£ is a US quote.

5. (e) The spread is seen to be lower in the retail market than in the interbank market

The spread is seen to be higher in the retail market than in the interbank market. This is because of the higher volumes and the greater liquidity in the interbank market (the lower the liquidity, the higher the risk of transaction being set off at a disadvantageous rate, and hence, the higher the spread).

The spread arises due to the presence of the opportunity cost for the risk involved is a contradictory statement as the spread arises due to the presence of transaction cost and not opportunity cost for the risk involved.

6. (b) Forwards

A forward contract (also called an outright forward) is one where the parties to the transaction agree to buy or sell a commodity (here, a currency) at a pre-determined future date at a price. This future date may be any date beyond two business days. The price and the terms of delivery and payment are fixed at the time of entering the contract.

7. (a) Spot rate

The rate that is applicable for delivery on the second business day is referred to as Spot rate.

8. (c) 2.48%

$$\frac{64.95-64.55}{64.55} \times \frac{12}{3} \times 100 = 2.48\%$$

9. (a) Currency swaps

A currency swap is a combination of two transactions – one spot and one forward – with an exchange of currencies taking place at pre-determined exchange rates. The forward leg is in the opposite direction to that of the spot leg, i.e. the party selling currency A in the spot leg buys it in the forward leg and vice versa.

10. (e) 29th August 2016

Spot transactions allow you to exchange your currency for another at current exchange rates. This transfer will be affected in two business days. Saturday and Sunday being holidays all transactions done on Friday will be settled on Tuesday.

Unit 7

Exchange Rate Determination

Structure

"A flexible exchange rate is important, and it shouldn't be artificially restrained, because of the needs of the economy."

- Elvira Nabiullina, Russian economist and current head of the Central Bank of Russia

7.1 Introduction

Exchange rates have to be flexible and not controlled and the chapter deals with how exchange rates are determined for flexibility.

In the previous unit, we discussed about the computation of various types of exchange rates – like direct rate, cross rate and forward rates. We have also discussed the structure of foreign exchange dealing room and various operational issues in dealing room functioning. We have also noted that several factors affect the exchange rates.

Who will determine the exchange rate between two currencies? What are the important factors that determine exchange rates? How the equilibrium in exchange rates is determined and why exchange rate moves up and down?

We have seen that foreign exchange is a commodity and every commodity has a price. We have also seen that the foreign exchange rate is a price at which one

currency is converted into another currency. Since it is a commodity the supply-demand conditions of the commodity are applicable in the foreign exchange market. Hence the two of the most important macro-economic factors price levels and interest rates are relevant

Since the international finance is settled through foreign exchange transactions and these transactions are exchange rate determinant, understanding the principles behind exchange rate determination is very important aspect one should understand.

In this unit, the relationship between these two variables price levels and interest rates with exchange rates will be examined.

7.2 Objectives

After studying this unit, you should be able to:

- State the underlying principles of Purchasing Power Parity (PPP)
- Give note on empirical evidences on checking the validity of Purchasing Power Parity (PPP) principle
- Enlist the influential factors that affect the Purchasing Power Parity (PPP) theory
- Explain the consideration that holds good on conditioning the Interest Rate Parity (IRP) theory
- Bring out the relationship between Purchasing Power Parity and Interest Rate Parity theory
- Describe the reasons for non-acceptance of Interest Rate Parity theory.

7.3 Purchasing Power Parity (PPP) Principle

The Purchasing Power Parity (PPP) principle was enunciated by a Swedish economist, Gustav Cassel in 1918. According to this theory, the price levels (and the changes in these price levels) in different countries determine the exchange rates of these countries' currencies. For instance, if the inflation rate in United States is higher than the Canadian inflation rate, then the purchasing power of the US will erode compared to that of Canadians. The value of the USD against the CAD will get adjusted downwards in the markets to balance the purchasing power of the two currencies.

The basic tenet of this principle is that the exchange rates between various currencies reflect the purchasing power of these currencies. This tenet is based on the 'Law of One Price'.

7.3.1 The Law of One Price

The assumptions of the 'Law of One Price' are:

- **Movement of Goods:** The 'Law of One Price' assumes that there is no restriction on the movement of goods between countries, i.e., it is possible to buy goods in one market and sell them in another. This implies that there are no restrictions on international trade, either in the form of a ban on exports or imports, or in the form of quotas.
- **No Transportation Costs:** Strictly speaking, the 'Law of One Price' would hold perfectly if there were no transportation costs involved, though there are some transactions (explained later) which bypass this assumption.
- **No Transaction Costs:** This law assumes that there are no transaction costs involved in the buying and selling of goods.
- **No Tariffs:** The existence of tariffs distorts the 'Law of One Price', According to the 'Law of one price', in equilibrium conditions, the price of a commodity must be the same across the world. If it were not true, arbitrageurs would drive the price towards equality by buying in the cheaper market and selling in the dearer one, i.e. by two-way arbitrage. For example, if the cost of steel in Germany (in dollar terms) were USD 625/ tonne and in the US, it were USD 725 /tonne, arbitrageurs would start buying steel in Germany to sell it in the US. This would increase the steel prices in Germany and reduce the US prices. This process will continue till steel becomes equally priced in both the countries.

The equalization of prices is possible only in perfect-market conditions, where there are no transportation costs and no restrictions on trade in the form of tariffs. In the presence of the two conditions - transportation costs and trade restrictions, the price of a commodity can differ in two markets by the quantum of transportation cost between the two countries and/or the amount of tariff imposed on the commodity. Continuing the earlier example, if the cost of transporting a tonne of steel from Germany to the US were USD 50, the arbitrage would continue to take place only till the difference between the prices of steel in the two countries was reduced to USD 50. However, the process of the genuine buyers of a commodity buying from the cheaper market imposes stricter conditions on the prices in the commodity markets by driving the price to equality in the different markets. Hence, if the cost of transporting steel from the two markets to the buyer country is the same, the price of steel will have to be the same in both the markets. If there is some difference in the transportation costs, then the price may differ to the extent of such difference in the transportation costs. Since this difference in transportation costs is expected to be less than the cost of transporting the commodity from one market to the other (Germany and the US in our example), the genuine buyers' preference brings the world prices of a commodity closer than is required by arbitrage. Even where arbitrage does not take place, the actions of genuine buyers make the world prices remain close.

We have seen that the price of any commodity must be the same across countries, when they are expressed in the same currency everywhere (dollar price in our example). What about prices denominated in the local currencies? This is where the *law of one price* links exchange rates to commodity prices. According to this law, the domestic currency price of a commodity in various countries, when converted into a common currency at the ruling spot exchange rate, is the same throughout the world. So, the price of a commodity in country A can be easily calculated by converting its price in country B's currency at the ruling spot exchange rate between the two countries' currencies.

To continue our example:

$$p_{Germany} = S(€/\$) \times p_{US}$$

Where,

$p_{Germany}$ is the price of steel in Germany

S(€/$) is the spot exchange rate between Mark and Dollar and

p_{US} is the price of steel in the US.

This equation can be generalized as:

$$p_A^x = S(A/B) \times p_B^x \qquad \text{(Eq. 1)}$$

Where,

p_A^x is the price of commodity 'x' in country A.

S(A/B) is the spot exchange rate of the two countries' currency and

p_B^x is the price of commodity 'x' in country B.

The following provides a forecast on how India will grow, holding a stronger economic position by 2050. Because India being one among the emerging economics (E7) going past the US economy in terms of Purchasing Power Parity (PPP).

[23] India's Purchasing Power Parity by 2050

According to the business consultancy firm, PricewaterhouseCoopers (PwC) projection analysis report, "The World in 2050", it is anticipated that the E7 economies comprising Brazil, China, India, Indonesia, Mexico, Russia, and Turkey are likely to grow at an annual average rate of almost 3.5 per cent over the next 34 years, compared to just 1.6 per cent for the advanced G7 nations of

[23] Indian economy projected to overtake US by 2040 in purchasing power parity terms: PwC report, http://timesofindia.indiatimes.com/business/india-business, Neeraj Thakur, Indian Economy to Be Bigger than US in Purchasing Power Parity by 2050, http://profit.ndtv.com/news/economy/article, February 7, 2017

Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. India is all set to go past the economy of the United States by 2050 in Purchasing Power Parity (PPP) terms, according to the PWC report. It stated that India's growth has been a part of the larger trend of the emerging market nations, supported by

- Fast growing populations
- Strong domestic demand, and
- Large size of workforce

Emerging markets to achieve their fullest potential, have to be complemented with investments in education, improvement in macro-economic fundamentals and development in terms of more effective political and legal institutions. China seemed to achieve a middling average income level by 2050, while India remains in the lower half of the income range given its starting point, despite relative high projected growth over time.

The PricewaterhouseCoopers (PwC) report represents the following factual elements on the Emerging Market economies that are anticipated to grow globally:

- In growth terms, Vietnam, India and Bangladesh are anticipated to evolve as the fastest growing economies over the period of 2050, averaging the growth of around 5 per cent per annum.
- India is anticipated to overtake the US by second place in 2050, while Indonesia in fourth place would overtake advanced economies like Japan and Germany in the same period.
- China that has already overtaken the US, is the largest economy based on GDP in PPP terms, and could be the largest valued at market exchange rates before 2030.
- World economy is expected to double in size by 2042, growing at an annual average real rate of around 2.5 per cent between 2016 and 2050.

For instance: The Indian 'Information Technology' (IT) firms are expected to see a rise in delivery costs in the near-to- medium term, as the revenue from the US has been at 62% of the total, comparatively higher than that of other regions. ICRA, an independent and professional investment information and credit rating agency in India, had pointed out that in the last few years, the onshore revenue of firms in the sample had increased from 49% in fiscal year 2011 to 57% in fiscal year 2016. Those with onsite presence through local hires are about to gain naturally having a competitive advantage and flexibility, while bidding for new contracts. Hence, this shift in global economic power to emerging economies is one of the most relevant and pronounced megatrends for India.

The building confidence of Indian CEOs about their company's prospects and the kind of new business opportunities seen in India today, gathers a testimonial to the current trend. While the E7 may comprise almost 50 per cent of world GDP by 2050, G7's share is expected to decline at just over 20 per cent. Emerging markets are projected to close the income gap gradually over time but the full convergence on income levels across the world is likely to take place, well beyond 2050.

Example: India: The 3rd Largest Economy in PPP

The purchasing power parity of India stood at $ 8,051 billion which happens to be 6.7% in terms of the total worlds GDP of $ 119,547 bn, India positioned itself at 3rd after China at 16.4% and US at 16.3 %.

In terms of amount in US $, China ranked one with $24.3 trillion, and the USA ranked 2nd with $20.9 trillion, while India ranked 3rd in the world with $8.9 trillion.

It has to be noted that 75 per cent of the global GDP is contributed by 19 economies, of which India, Indonesia, and the Arab Republic of Egypt are classified as lower-middle-income economies, China, the Russian Federation, Brazil, Mexico, Turkey, and the Islamic Republic of Iran are classified as upper-middle-income economies, and the remaining 10 (United States, Luxembourg, Switzerland, Germany, Australia, Norway.

Austria, Belgium, Netherlands and Canada) are classified as high-income economies. In terms of global population, they represent 64 per cent.

PPP principle suggests that the exchange rates between various currencies affect the purchasing power of these currencies.

Source- https://www.businesstoday.in/latest/economy-politics/story/india-remains-3rd-largest-economy-in-purchasing-power-parity-still-way-behind-china-us-261970-2020-06-23 dated 23rd June, 2020, Accessed on 12.07.22

7.3.2 Forms of PPP

There are three forms of PPP which emerge from the 'law of one price' – the absolute form, the relative form, and the expectations form.

a. The Absolute form of PPP

If the 'law of one price' were to hold good for each commodity, then it will follow that:

$$P_A = S(A/B) \times P_B \qquad \text{(Eq. 2)}$$

Where,

P_A and P_B are the prices of the same basket of goods and services in countries A and B respectively.

Eq. 2 can be rewritten as:

$$S(A/B) = \frac{P_A}{P_B} \qquad \text{(Eq. 3)}$$

According to this equation, the exchange rate between two countries' currencies is determined by the respective price levels in the two countries. For example, if the cost of a basket of goods and services were ₹ 3,215 in India and the same cost $ 50 in the US, then the exchange rate between the rupee and the dollar would be 3,215/50 = ₹ 64.30 / $.

Absolute PPP makes the same assumptions as the 'Law of One Price'. It also makes a few additional assumptions which are given below:

- **No Transaction Costs in the Foreign Currency Markets:** It assumes that there are no costs involved in buying or selling a currency.
- **Basket of Commodities:** It also assumes that the same basket of commodities is consumed in different countries, with the components being used in the same proportion. This factor, along with the Law of One Price, makes the overall price levels in different countries equal.
- Though the explanation provided by the absolute PPP is very simple and easy to understand, it is difficult to test the theory empirically. This is because the indexes used in different countries to measure the price levels may not be comparable due to:
    i. The indexes being composed of different baskets of commodities, due to different needs and tastes of the consumers.
    ii. The components of the indexes being weighted differently due to their comparative relevance.
    iii. Different base years being used for the indexes.

Due to these reasons, these price indexes cannot be used to evaluate the validity of the theory.

b. The Relative Form of PPP

The absolute form of PPP describes the link between the spot exchange rate and price levels at a point of time. On the other hand, the relative form of PPP talks about the link between the changes in spot rates and in price levels over a period. According to this theory, changes in spot rates over a period reflect the changes in the price levels over the same period in the concerned economies.

Relative PPP relaxes several assumptions made by the 'Law of One Price' and the absolute PPP.

These are:

- Absence of transaction costs

- Absence of transportation costs
- Absence of tariffs

The relaxation of these assumptions implies that even when these factors are present, in certain conditions the relative PPP may still hold good. (These conditions are explained in a subsequent section). The relative form can be derived from the absolute form in the following manner:

Let $\bar{S}$ (A/B) denote the percentage change in spot rate (expressed in decimal terms) between currencies of countries A and B over a year, and $\bar{P}_A$ and $\bar{P}_B$ denote the percentage change in the price levels (expressed in decimal terms), i.e. the inflation rates in the two countries over the same period of time. If

$$P_A = S(A/B) \times P_B \quad \text{(Eq. 2)}$$

then, at the end of one year,

$$P_A(1 + \bar{P}_A) = S(A/B)\ \{1 + \bar{S}\ (A/B)\} \times P_B\ (1 + \bar{P}_B) \quad \text{(Eq. 4)}$$

Here, the left-hand side of the equation represents the price level in country A after one year, the first term on the right-hand side of the equation represents the spot exchange rate between the two currencies at the end of one year, and the last term gives the price level in country B after one year. These terms are arrived at by multiplying the figures at the beginning of the year by 1 plus the percentage change in the respective figures.

Dividing Eq. 4 by Eq. 2, we get

$$(1 + \bar{P}_A) = \{1 + \bar{S}\ (A/B)\} \times (1 + \bar{P}_B) \quad \text{(Eq. 5)}$$

We can rewrite the equation as:

$$1 + \bar{S}\ (A/B) = \frac{1+\bar{P}_A}{1+\bar{P}_B}$$

$$\rightarrow \bar{S}\ (A/B) = \frac{1+\bar{P}_A}{1+\bar{P}_B} - 1 \quad \text{(Eq. 6)}$$

$$\rightarrow \bar{S}\ (A/B) = \frac{\bar{P}_A - \bar{P}_B}{1+\bar{P}_B} \quad \text{(Eq. 7)}$$

Eq. 7 represents what is advocated by the relative form of the 'Purchasing Power Parity Principle'. According to the equation, the percentage change in the spot rate (A/B) equals the difference in the inflation rates divided by 1 plus the inflation rate in country B. For example, if the inflation rate in India were 10% and that in the US were 3%, the ₹/$ rate would change over a period of one year by (0.10 – 0.03)/1.03 = 0.068 i.e., 6.8%.

The effect of different inflation rates can be understood clearly from Eq. 6. Continuing the example of India and the US, a higher inflation rate in India than

in the US makes the first term on the RHS of the equation greater than 1, and hence the RHS positive. A positive change in the ₹/$ spot rate implies that one year hence, a dollar would command a higher number of rupees, i.e. the dollar would appreciate. It follows that a country facing a higher inflation rate would see its currency depreciating.

Going back to Eq. 7, we can see that the term $1+\bar{P}_B$ is likely to be very small. For example, if the inflation rate is 3 per cent, the term will be equal to 1.03. Hence, Eq. 7 can be approximated as:

$$\bar{S}\ (A/B) = \bar{P}_A - \bar{P}_B \qquad \text{(Eq. 8)}$$

According to Eq.7 and 8, the exchange rate changes at a rate equal to the difference between the inflation rates in the two countries. So, the ₹/$ rate would change at 7% (i.e., 0.10 – 0.03), which is close to the 6.8% arrived at earlier. However, it must be kept in mind that the higher the inflation figures, the greater the difference between the figure arrived at from Eq. 7 and Eq. 8.

The relative form of PPP is superior to the absolute form. In that, the former is not affected by certain inefficiencies which prevent the latter from holding good. For example, suppose that due to transaction costs, the prices in country A were consistently lower by a fixed proportion, than those warranted by the absolute PPP. This can be written as:

$$P_A = S(A/B) \times P_B (1 - x) \qquad \text{(Eq. 9)}$$

with 'x' being the proportion by which the prices in country A are consistently lower. Then, at the end of the year

$$P_A (1 + \bar{P}_A) = S(A/B) \{1 + \bar{S}\ (A/B)\} \times P_B (1 + \bar{P}_B)(1 - x) \qquad \text{(Eq. 10)}$$

Dividing Eq. 10 by Eq. 9, we again get

$$(1 + \bar{P}_A) = \{1 + \bar{S}\ (A/B)\} \times (1 + \bar{P}_B)$$

Hence, the relative form of PPP does not get affected by consistent violations of the absolute form.

c. Expectation form of PPP

According to this form of PPP, the expected percentage change in the spot rate is equal to the difference in the expected inflation rates in the two countries. This theory assumes that speculators are risk-neutral and markets are perfect. Let the expected percentage change in the spot rate be denoted by $S^*(A/B)$, the expected inflation rate in country A by P_A^*, and the expected inflation rate in country B by P_B^*. If a person buys the underlying basket of commodities in country A and holds it for one year, he/she can expect to earn a return equal to the expected inflation rate in country A, i.e. P_A^*. On the other hand, if he/she decides to buy the same

basket of commodities in country B, and holds it for one year. Then he/she convert his/her returns in currency B into currency A at the spot rate that is expected to rule at that time {i.e., S*(A/B)}, his/her expected returns will be equal to the expected inflation rate in country B, i.e. P_B^*, plus the expected change in the spot rate. If the speculators are risk-neutral, as this theory assumes, then these two returns should be equal, i.e.

$$P_A^* = P_B^* + S^*(A/B)$$

$$\rightarrow S^*(A/B) = P_A^* - P_B^* \qquad \text{(Eq. 11)}$$

Eq. 11 is called the expectations form or the efficient markets form of PPP. As can be observed, it is like Eq.8, with all the variables being expressed in expected terms. So, if the Indian inflation rate is expected to be 8% over the next year, and the US inflation rate is expected to be 2%, the ₹/$ exchange rate can be expected to change by 6%.

One of the features of perfect markets is that people are expected to behave rationally. Rational behavior implies that expectations would reflect the true behavior of variables over the long-term. This, in turn, means that the expected change in the exchange rate and the expected inflation rates would be equal to the actual average change in the exchange rates and the actual average inflation rates. If this were true, then Eq. 11 holding good would imply that Eq. 8 also holds good in the long-term. Interpreted in another way, it also means that Eq. 11 may hold perfectly even if Eq. 8 does not, if the latter (Eq.8) holds good on an average, over a long period.

Let us now see how the Purchasing-Power Parity principle behaves in the real world.

7.4 Validity of PPP - Empirical Evidence

A multitude of studies have been conducted over several years to verify whether the law of one price and the various forms of PPP actually hold good. These studies were conducted using various sets of data and various methods of testing. According to the findings of a study conducted by J. David Richardson, the Law of One Price does not seem to hold good in the short-term, especially for goods having an inelastic demand (as these are the goods for which differential prices can be charged in different countries without the demand getting affected). In case of other goods, it does hold good, though only in the long-term.

As for the relative PPP, the results of various studies have been quite conflicting. Irving B Kravis and Richard E Lipsey conducted a study and arrived at the conclusion that PPP does not hold precisely. They found that there were substantial departures over long periods even for traded goods, while for non-traded goods PPP does not seem to hold even over short periods. According to a

study conducted by Hans Genberg, PPP does not seem to hold good either with fixed exchange rate regimes, or with flexible exchange rate regimes. NielsThygesen's study points out that a change in spot rates is not reflected in a change in prices for quite a long period of time. One of the studies conducted by J. Hodgson and P Phelps arrives at the conclusion that a change in prices does affect the exchange rate, though with a long-time lag. Yet another study by Rogalsi and Vinso found that a change in prices gets immediately reflected in the exchange rate movements, as the forex markets are perfect and reflect all the available information with immediate effect.

Though highly conflicting results have been obtained by different studies, those based on the generally available data largely indicate that PPP does not hold good, i.e., the movements in exchange rates are not explained by movements in price levels, and vice versa. A major reason for this happening is that there are many other factors which also affect the movements in exchange rates, especially in the short-term, which may dominate the effect of inflation. This limits the effect of price movements on the exchange rates. There are three other major reasons for the PPP being not adequate enough.

Example: The Purchasing Power Parity and Exchange-Rate Economics Half a Century on

To illustrate the basic workings of PPP theory, the authors Hai Long Vo, Duc Hong Vo analysed the AUD/USD exchange rate closely tracked by the ratio of the two countries' consumer price indices (CPIs) from 1901 to 2019. The equalization of prices over the longer term means that the corresponding relative price remains unchanged, so in this sense, PPP reflects the neutrality of money. With the support of a substantial body of research, a consensus has been reached in respect to how PPP can serve as a guide for exchange-rate determination in the long run.

In the concluding remarks the authors identified despite the significant decline in transport costs and the increase in the speed of transportation worldwide (Hummels, 2007), multidimensional barriers to trade appear to remain very substantial and are sufficient to prolong deviations from PPP (Anderson & van Wincoop, 2004). This issue is of particular relevance in the context of the recent global trade tensions and the seemingly endless gyrations of the currency markets.

In the short run, nominal exchange rates movements are disconnected from price movements, leading to the observation that nominal exchange rates appear to disrupt PPP convergence. This is because the nominal exchange rate

Contd. .....

is simply the relative price of monies-not of products-and is determined by conditions for international portfolio capital equilibrium rather than product trades. In the long run, PPP holds with a greater degree of certainty as exchange rate changes are more likely to move in tandem with economic fundamentals.

Source- https://onlinelibrary.wiley.com/doi/full/10.1111/joes.12504 dated 2nd April, 2022, Accessed on 07.12.22

Activity 7.1

Bring out the differences between three forms of Purchasing Power Parity (PPP) theorem. As an analyst, evaluate the causes and effects of PPP affecting the exchange rates.

Answer:

7.5 Reasons for PPP Not Holding Good

Earlier sections mention the assumptions applicable to the 'Law of One Price' and to the various forms of PPP. If any of these assumptions does not hold good, the PPP would also not hold. Besides, even if PPP were holding good, the results of an empirical study could get affected by the statistical methods employed. These factors give rise to the following reasons for PPP not being adequate enough:

- Constraints on movement of commodities
- Price index construction
- Effect of the statistical method employed

Constraints on Movement of Commodities

As mentioned earlier, one of the constraints on movement of goods is transportation cost, either between the two countries producing the same commodity, or between the buyer country and the two producing countries. Another constraint is the presence of tariffs. These factors allow deviations in prices, and hence, a deviation from absolute PPP.

It may be noted that Relative PPP holds good if the quantum of deviation in prices is consistent over time.

One factor which affects both absolute as well as relative PPP, is the presence of quotas imposed on the amount of goods that may be exported from, or imported to a country. As this imposition restricts the quantity of goods, arbitrageurs can move from one place to another, this movement allows for deviations from prices which would reign, were PPP to hold good. Another such factor is the

impossibility of moving some items from one place to another. These include: perishable goods like milk and vegetables, immovable goods like land and buildings etc., and services such as those related to tourism. The immovability of such items allows their prices to deviate from one country to another. Product differentiation is another factor which allows different prices to exist for goods produced in different countries. For example, the price of apples grown in the US may be different from those grown in India because of the differences in quality.

Price Index Construction

Movement in prices is generally measured by price indexes. Price indexes used in different countries are based on different baskets of commodities, with the proportions of the commodities in accordance with the usage and taste of the residents of the country. When these indexes are used to measure the movement in price levels, the results do not conform to PPP. Many a time, the base year of these indexes is different. While this does not hinder the use of these indexes for verifying relative PPP, these indexes become inappropriate for verifying absolute PPP.

Effect of the Statistical Method Employed

There are two major ways in which a statistical method can affect the results of an empirical study. The first is through incorrect measurement of the differences in the inflation rates in the two economies. The second is through ignoring the fact that there is a two-way link between the spot exchange rate and inflation rates. Both the factors affect each other, i.e. while the inflation rates affect the exchange rates, the former also get affected by any change in the latter. Any statistical method which fails to recognize this two-way cause-effect flow is likely to produce erroneous results.

The fact that PPP does not always hold good gives rise to the concept of real exchange rate. The spot rate, adjusted for the change in price levels in the two countries during a specified period, gives the real exchange rate. Any change in the real exchange rate is called the real appreciation or depreciation of the currency. One of the ways to calculate the real exchange rate is:

$$S_r(A/B) = S(A/B) \times \frac{I_B}{I_A}$$

Where,

S (A/B) is the spot rate at a point of time,

I_A and I_B are the price indexes in the respective countries having the same base year, andS_r is the real exchange rate.

For example, if the spot rate is ₹ 64.93/$, and the price index in India and the US is at 130 and 112 respectively, the real exchange rate will be

$$S_r = 64.93\frac{(112)}{(130)}$$

= ₹ 55.94 / $

If the real exchange rate in the base period (i.e. at the beginning of the period over which the relevant inflation rates are applicable) was ₹ 60/$, the rupee can be said to have appreciated in real terms.

Check Your Progress -1

1. When was the Purchasing Power Parity (PPP) principle propounded by a Swedish economist, Gustav Cassel?
   a. 1915
   b. 1918
   c. 1920
   d. 1921
   e. 1930
2. Which of the following assumption holds true in the case of 'Law of One Price'?
   a. There is restriction on the movement of goods between countries.
   b. Transportation costs are involved.
   c. There are no transaction costs involved in buying and selling of goods.
   d. The existences of tariffs hold the law in perfect place in representation.
   e. The price of a commodity varies across the world.
3. Which form of PPP describes the linkage between the spot exchange rate and the price levels at a point of time?
   a. Relative
   b. Absolute
   c. Relative and absolute
   d. Expectation
   e. Relative and expectation
4. If the spot rate is ₹ 90 for 10 RMBs and the price index in India and China is at 130 and 100, what is the real exchange rate of 10 RMBs?
   a. ₹ 45.68
   b. ₹ 69.23
   c. ₹ 117
   d. ₹ 100
   e. ₹ 46.75
5. What is the name given to the index when a country builds an index based on different baskets of commodities, with the proportions of commodities in accordance to usage and taste of residents in their country?

a. Price indexes
b. Export indexes
c. Import indexes
d. Housing indexes
e. Terms of trade

7.6 Interest Rate Parity (IRP)

The PPP gives the equilibrium conditions in the commodity market. Its equivalent in the financial markets is the Interest Rate Parity (IRP) or the covered interest parity condition. According to this theory, the cost of money (i.e., the cost of borrowing money or the rate of return on financial investments), when adjusted for the cost of covering foreign exchange risk, is equal across different currencies. This is so, because in the absence of any transaction costs, taxes, and capital controls (i.e., restrictions on international investments and financing), investors and borrowers will tend to transact in those currencies which provide them the most attractive prices. Besides, the arbitrageurs will always be on the lookout for an opportunity to make riskless profits. The resultant effects on the demand and supply would drive the value of currencies towards equalization Just like the price of commodities across different countries influence the buyers' and sellers' decision as to where they should transact, the ruling interest rate on financial assets denominated in different currencies affect investors' and borrowers' decisions regarding the market they would like to transact in. Let us start with the investors.

7.6.1 Investors' Decisions

Any individual or corporate is unlikely to have fully-matched income and expenditures in each period. While there are periods where the current expenditure is more than the current income giving rise to a requirement to borrow, there are also periods where the opposite holds true giving rise to a chance to invest. These periods of surplus or shortfall may range from a few days to a few years. Suppose, a corporate has surplus funds for a period of one year. It could either invest them in securities denominated in the domestic currency, or in securities denominated in any other currency. The returns it will earn if it invests in securities denominated in a foreign currency will depend on two factors – the interest rate on those securities, and the change in the value of the relevant currency. Suppose, the currency in which the company's investments are denominated depreciates during the period of the investment. In that case, the gain by way of interest earned will stand eroded by the loss on conversion to the domestic currency. With the exchange rates being flexible, there is always the risk of exchange rates moving unfavorably. Since an investment in securities denominated in the domestic currency does not face any exchange risk, the same

risk will have to be removed from other investments as well, to make their returns comparable. The investor can do this by entering a forward contract for the relevant maturity. By taking the forward rate into consideration, the investor will be able to know the total returns that can be earned on securities denominated in different currencies, which will enable him/her to invest where his/her returns are maximized.

Let us assume the domestic currency to be A and the foreign currency to be B. An investor can earn a return of r_A on domestic deposits, and a return of r_B on the foreign currency denominated securities. For making an investment in the latter, the investor will have to first convert his/her holdings in currency A into currency B. Let the spot rate at which this conversion takes place be S(A/B). At the same time, let the relevant forward rate be F(A/B). For every unit of currency A, the investor will get 1/S(A/B) units of currency B. This, when invested, will at the end of one year give

$$1/S(A/B) \text{ x } (1 + r_B) \text{ units of B}$$

These, when converted at the forward rate, will give

$$\frac{F(A/B)}{S(A/B)} \text{ x } (1 + r_B) \text{ units of A}$$

At the same time, an investment in the domestic currency will, at the end of one year, give

$$(1 + r_A) \text{ units of A.}$$

Now suppose that

$$(1 + r_A) > \frac{F(A/B)}{S(A/B)} \text{ x } (1 + r_B) \qquad \text{(Eq. 12)}$$

In such a case, investors will prefer to invest in securities denominated in currency A rather than in currency B, as it would fetch them a higher return. If the opposite were true i.e.

$$(1 + r_A) < \frac{F(A/B)}{S(A/B)} \text{ x } (1 + r_B) \qquad \text{(Eq. 13)}$$

the investors will prefer to invest in securities denominated in currency B. The investors will be indifferent as to the choice of currency only if

$$(1 + r_A) = \frac{F(A/B)}{S(A/B)} \text{ x } (1 + r_B) \qquad \text{(Eq. 14)}$$

i.e. the returns on both the investments were equal.

Let us see an example. Let us assume that

Spot (₹/$) = ₹ 65/$

₹	=	14%
r$	=	5%
1 year F(₹/$)	=	₹ 69.2/$
Investible funds	=	₹ 2,000

If the investor invests in a rupee deposit, at the end of one year he/she would have

$$₹ 2,000 (1 + 0.14) = ₹ 2,280$$

If instead, he/she wants to invest these funds in a dollar deposit, he/she would first need to convert his/her rupee holdings into dollars. The ₹ 1,000 will fetch him

$$\$ \frac{2000}{65} = \$ 30.77$$

A dollar deposit of $30.77 would, after one year, fetch

$$\$ 30.77 (1 + 0.05) = \$ 32.31$$

Converted into rupees at the forward rate, this would give

$$₹ (32.31 \times 69.2) = ₹ 2235.852$$

Since the covered yield on the dollar deposit is higher than the rupee yield, the investor would like to invest money in the former.

Using Eq. 14, we can say that the forward rate at which the investor would be indifferent between the two deposits, would be where

$$F(₹/\$) = S(₹/\$) \times \frac{(1 + r_{Rs.})}{(1 + r_{\$})}$$

$$= 65 \times \frac{1.14}{1.05} = ₹ 70.59/\$$$

An easier interpretation of Eq. 14 is possible. Let us subtract $(1 + r_B)$ from both sides of the equation. This gives us

$$(1 + r_A) - (1 + r_B) = \left[\frac{F(A/B)}{A(A/B)} X(1 + r_B)\right] - (1 + r_B)$$

Solving the equation, we get

$$r_A = r_B + \frac{F(A/B) - S(A/B)}{S(A/B)} \times (1 + r_B) \qquad \text{(Eq. 15)}$$

The RHS of Eq. 15 gives the covered yield on currency B. The second term on the RHS of the equation is nothing but the forward premium on currency B. Hence, investors will be indifferent between securities denominated in the two currencies when the domestic currency interest rate is equal to the foreign currency interest rate plus the forward premium on the foreign currency. If the

former exceeds the latter, investors will prefer securities denominated in the domestic currency. In case the opposite is true, investors will prefer foreign-currency securities.

On expanding Eq. 15, we see that one of the figures is

$$\frac{F(A/B)-S(A/B)}{S(A/B)}\times r_B$$

which is the forward premium on the interest element. As this figure is likely to be miniscule (for example, if the interest rate is 5% and the forward premium is 4%, this figure will be 0.2%, i.e. 0.002), we may drop it without significantly affecting the accuracy and rewrite Eq. 15 as

$$r_A = r_B + \frac{F(A/B)-S(A/B)}{S(A/B)} \qquad \text{(Eq. 16)}$$

The difference between Eq. 15 and Eq. 16 is that the former considers the forward premium on the principal as well as the interest component, while the latter considers the forward premium only on the principal portion.

Till now we have considered the annual rates of interest and annual forward premium. If the investment is for a shorter period, Eq. 12 can be modified as:

$$1+\frac{r_A}{m} < \frac{F_n(A/B)}{S(A/B)}\times(1+\frac{r_B}{m})$$

Where,

r_A is the annualized return on currency A securities for maturity 'n'.

r_B is the annualized return on currency B securities for maturity 'n'.

F_n is the forward rate for maturity 'n'.

m is equal to 12/n where n is in months.

Here, it is assumed that the interest rate is compounded annually.

Similarly, Eq. 13 can be modified as:

$$1+\frac{r_A}{m} < \frac{F_n(A/B)}{S(A/B)}\times(1+\frac{r_B}{m})$$

Eq. 15 can be modified as:

$$r_A = r_B + m\left[\frac{F_n(A/B)-S(A/B)}{S(A/B)}\right]\times(1+\frac{r_B}{m})$$

For example, if

S (₹/£) = 80.75 annualized return on a 3-month deposit in ₹ = 10%.

Annualized return on a 3-month deposit in £ = 5.8%.

3-m F (₹/£) = 82.40

Then, the covered yield on a £ deposit will be:

$$0.058 + 4\left[\frac{82.40-80.75}{80.75}\right] \text{ x } \left(1+ \frac{0.058}{4}\right)$$

$$= 0.1417 = 14.1\%$$

Since the covered yield on pound deposit is lower than the yield on rupee deposit, the investor would prefer to invest in the rupee deposit.

7.6.2 Borrowers' Decision

When the need to borrow money arises, the borrower has the option to borrow in the domestic currency, or in foreign currency. Again, his/her decision will be based on the cost of domestic currency borrowing as compared to the covered cost of foreign borrowing.

For every unit of domestic currency borrowed, the borrower will have to pay at the end of the year

$(1 + r_A)$ units of A.

Borrowing 1 unit of A is equivalent to borrowing 1/S(A/B) units of currency B. At the end of one year, the borrower will have to repay

$$\frac{1}{S(A/B)} \times (1 + r_B) \text{ units of B.}$$

When converted at the forward rate, this gives

$$\frac{F(A/B)}{S(A/B)} \times (1 + r_B) \text{ units of A.}$$

Hence, the borrower will borrow in currency A if

$$(1 + r_A) < \frac{F(A/B)}{S(A/B)} \times (1 + r_B) \qquad \text{(Eq. 17)}$$

On the other hand, he/she will borrow in currency B if

$$(1 + r_A) > \frac{F(A/B)}{S(A/B)} \times (1 + r_B) \qquad \text{(Eq. 18)}$$

He/she will be indifferent to the choice of currencies if

$$(1 + r_A) = \frac{F(A/B)}{S(A/B)} \times (1 + r_B) \qquad \text{(Eq. 19)}$$

Again, Eq. 19 can be rewritten as

$$r_A = r_B + \frac{F(A/B) - S(A/B)}{S(A/B)} \times (1 + r_B) \qquad \text{(Eq. 20)}$$

As we see, Eq. 20 is the same as Eq. 15. Here, the RHS of the equation gives the covered cost of foreign currency borrowing.

Let us again take an example. Let

S (₹/$) = ₹ 65.40/$

r ₹ = 10%

r $ = 4%

1 yr F (₹/$) = ₹ 68.35/$

If the borrower wants to borrow ₹ 1,00,000 now, he/she may borrow either in rupees or in dollars. If he/she borrows in rupees, at the end of the year, he/she would need to pay

₹ 1, 00,000 (1.10) = ₹ 1,10,000.

If instead, he/she borrows in dollars, he/she will need to borrow

$$\frac{1,00,000}{65.40} = \$\ 1529.05$$

At the end of the year, he/she would need to pay back

$ 1529.05 (1.04) = $ 1590.21

To repay these many dollars, he/she would need

₹ (1590.21 x 68.35) = ₹ 1, 08, 690.85

As the covered cost of borrowing in dollars is lower than the cost of borrowing in rupees, the borrower would prefer to borrow in dollars. Again, from Eq. 19, we can say that the borrower would be indifferent between the two currencies if

$$F(₹/\$) = S(₹/\$) \times \frac{(1 + r_{Rs.})}{(1 + r_{\$})}$$

$$= 65.40 \times \frac{(1.10)}{(1.04)}$$

$$= ₹\ 69.19 / \$.$$

7.6.3 Covered Interest Arbitrage

In addition to investors and borrowers, one more class of players benefit from cost of money varying from one currency to another – the arbitrageurs. If Eq. 14 does not hold good, the arbitrageur can make riskless profits by borrowing in the cheaper currency and investing in the costlier, using the forward market to lock-in his/her profits.

For example, if Eq. 12 were to hold good, the arbitrageur would borrow in the foreign currency, convert the receipts to the domestic currency at the on-going

spot rate, and invest in the domestic currency denominated securities, while covering the principal and interest from this investment at the forward rate. At maturity, he/she would convert the proceeds of the domestic investment at the pre-fixed forward rate and pay-off the foreign liability, with the difference between the receipts and payments serving as his profit. In case of Eq. 13 holding good, the arbitrageur would borrow in the domestic currency, convert it into foreign currency at the spot rate, invest the proceeds in foreign currency denominated securities, and cover the principal and interest from this investment at the forward rate, thus locking his domestic currency returns. This process of borrowing in one currency and simultaneously investing in another, with the exchange risk hedged in the forward market is referred to as covered interest arbitrage.

For example, if

S (₹/$) = 65.40

Annualized return on a 6-month deposit in ₹ = 10%

Annualized return on a 6-month deposit in $ = 6%

6-m F (₹/$) = 67.30

Then, the covered yield on the dollar deposit will be

$$\left[\frac{67.30-65.40}{65.40}\right] \text{ x } \left(1+\frac{0.06}{2}\right)$$

$$= 0.029924 = 2.99\%.$$

As the covered yield on the dollar deposit is higher than the cost of borrowing rupee funds, the arbitrageur would borrow funds in the rupee market and invest them in the dollar market. Suppose, he/she borrows ₹ 1,000, he/she can convert them at the spot rate at ₹ 65.40 and convert into $, he gets $ 15.29 (1000/65.40).

Investing these, at the end of 6 months, he/she will receive

$$15.29 \text{ X} \left(1+\frac{0.06}{2}\right)$$

$$= 15.7482$$

If these dollars are converted in the forward market, the arbitrageur will receive

₹ (15.7482 x 67.30) = ₹ 1,060

On the rupee borrowings, he/she will have to repay

$$= ₹ 1{,}000 \left(1+\frac{0.10}{2}\right)$$

$$= ₹ 1{,}050$$

The arbitrageur can use the proceeds from the dollar investments to pay-off this liability. At the end of the process, he would have made a profit of

₹ (1,060 – 1,050) = ₹ 10

It follows from the above discussion, that whenever Eq. 15 is not satisfied, it will result in:

- Investors preferring investing in one currency over another;
- Borrowers preferring to borrow in one currency over another;
- Arbitrageurs borrowing in one currency and investing in another.

All these three activities result in the forex markets and money markets getting affected in a manner that makes the interest rates and exchange rates adjust, so that Eq. 15 becomes true. For example, if Eq. 12 were true, the above-mentioned activities would result in:

- Foreign currency interest rate going up because of increased borrowing in that currency;
- Domestic interest rate falling as a result of increased investments in the currency;
- The spot rate falling due to increased supply of foreign currency in the spot market. For a given level of forward rate, this results in an increase in the forward premium on the foreign currency;
- The forward rate increases due to increased demand for the foreign currency in the forward market. Fora given level of spot rate, this will result in an increase in the forward premium on the foreign currency.

The second factor will result in a reduction in the yield on domestic investments, while rest of the factors will result in an increase in the covered cost of borrowing in the foreign currency. This process will continue till the inequality is removed and Eq.15 satisfied.

Now, suppose that Eq.13 held good. The opposite process will make the cost of domestic borrowing go up and the covered yield on foreign investments come down. This will keep happening till the equality between the yields is restored.

Thus, at any point of time, the market forces will make sure that

$$r_A = r_B + \frac{F(A/B) - S(A/B)}{S(A/B)} \times (1 + r_B)$$

or,

$$r_A - r_B + \frac{F(A/B) - S(A/B)}{S(A/B)} \times (1 + r_B) \qquad \text{(Eq.21)}$$

Eq.21 is referred to as the 'Covered Interest Rate Parity Condition'. When this condition holds good, investors and borrowers have no preference regarding the currency they would like to deal in, and there is no possibility of arbitrage profits. If we observe the approximate equivalent of Eq.15, i.e. Eq.16, we find that

$$r_A - r_B + \frac{F(A/B) - S(A/B)}{S(A/B)} \qquad \text{(Eq.22)}$$

i.e., forward premium on a currency will be equal to the difference in the interest rates on the two currencies, known as the interest rate differential. There can be various combinations of changes in the four variables, which can bring about an equilibrium across the money and forex markets. The effects of the equalization process described above, in terms of the quantum of change that will occur in each of the variables, depends on the liquidity of the individual markets. The less liquid the market, the greater will be the impact borne by it. Throughout the world, the spot market and the money market are generally observed to be more liquid than the forward market. This makes the forward market absorb most of the required changes. Hence, we can deduce that the interest rate differential determines the forward premium, rather than the opposite being true.

7.7 The Relationship between PPP and IRP

Let us see the relationship between purchasing power parity and interest rate parity.

7.7.1 Uncovered Interest Parity Condition

In the previous chapter, it was observed that if risk were ignored, then the expected spot rate would be equal to the forward rate. It follows from Eq.14 that

$$(1 + r_A) = \frac{S^{\pi}(A/B)}{S(A/B)} \times (1 + r_B) \qquad \text{(Eq.23)}$$

Where,

S^{π} (A/B) is the expected spot rate at the end of one year.

By definition, S^{π} (A/B) = S(A/B) x {1 + S* (A/B)}

Where,

$S^*(A/B)$ is the expected percentage change in the spot rate.

Hence e, Eq. 23 can be written as

$(1 + r_A) = \{1 + S^*(A/B)\} \times (1 + r_B)$

Solving, we get,

$1 + r_A = 1 + S^*(A/B) + r_B + \{S^*(A/B) \times r_B\}$

Since the last term on the right-hand side is likely to be very small, we may ignore it and get the approximate equivalent equation:

$r_A = S^*(A/B) + r_B$

or,

$$r_A - r_B = S^*(A/B) \qquad \text{(Eq. 24)}$$

Eq. 24 is referred to as the uncovered interest parity condition or the 'International Fisher' effect. According to it, the expected percentage change in the spot rate should be approximately equal to the interest differential.

Example: Relationship between PPP and IRP

Assume that the spot rate of $ = ₹80 as on July 2022.

The prevailing rate of interest at Mumbai is 8% & New York at 4%.

What should be the exchange rate of ₹ to $, 3 months hence (October 22), if the operation is for 10,000 $. Entire gain/ loss is on customer's account.

Answer: Transaction process.

Purchase 10,000 $ & invest for 3 months in N Y Bank

Borrow money to pay for 10,000$ in Mumbai.

Interest on 10,000$ in the US Market @ 4% for 3 months is 100$ and the amount is 10,100 $

Interest paid for borrowed money in Mumbai for 10,000$ @ 8 % for 3 months is as follows:

10,000$ invested in Indian ₹ is = 10,000 X 80 / US$= ₹8,00,000 = ₹16,000

Interest @ 8% for 3 months, if invested in a bank is ₹16,000 and the amount is 8,16,000

This amount should be equal to 10,100$.

Thus, the spot 3 months should be 8,16,000 / 10,100 = 80.79 / US$, according to 'international fisher' effect.

According to uncovered interest parity condition or the 'International Fisher', the expected percentage change in the spot rate should be approximately equal to the interest differential.

Source:

7.7.2 The Fisher Effect

The interest rate which we have been using till now is the nominal interest rate. The nominal interest rate does not represent the real increase in the investor's wealth, as the increase is subject to the inflation rate. The real increase is reflected by the real interest rate, a concept made popular by Irving Fisher. According to Fisher, the nominal interest rate is a combination of the real interest rate and the expected rate of inflation. More explicitly, the 'Fisher effect' or the 'Fisher equation' states that

$$1 + r = (1 + i) \times (1 + P^*)$$

Where,

r = nominal rate

i = real rate

P^* = expected inflation rate

Solved, it gives

$$r = i + P^* + (i \times P^*)$$

Since the last term will be quite small, we can say that on an approximate basis,

$$r = i + P^*$$

i.e., the nominal rate is equal to the real rate plus the expected inflation rate.

The Relationship

According to the expectations form of the PPP,

$$S^*(A/B) = P_A^* - P_B^* \text{ (from Eq. 11)}$$

According to the uncovered interest rate parity condition,

$$S^*(A/B) = r_A - r_B \text{ (Eq. 24)}$$

It follows that

$$r_A - r_B = P_A^* - P_B^*$$

Re-arranging, we get

$$r_A - P_A^* = r_B - P_B^* \qquad \text{(Eq.25)}$$

Eq. 25 is the Fisher open condition. It says that the nominal interest rates minus the expected inflation rates, i.e., the real interest rates, are equal across different countries. Intuitively also, the real interest rates should be equal across countries, otherwise the resultant capital flows will bring them to equality.

It can be observed that any of the three equations can be derived from the other two. If we assume two of them to hold good, it will automatically follow that the third also holds good. So, if we assume that the Fisher open condition and the expectations form of PPP hold good, we will be implicitly assuming that uncovered interest parity also holds good. Similarly, if uncovered interest parity is assumed to be true and the real interest rates are expected to be equal across different countries, it is implied that expectations form of PPP is assumed to be true.

The following brings out the basic difference between PPP and IRP in the context of arbitrage strategy.

[24]Covered Interest Arbitrage Vs. Uncovered Interest Arbitrage

The basic difference between PPP and IRP in the context of arbitrage strategy is well explained hereunder:

'Covered Interest Arbitrage':

'Covered Interest Strategy' is an arbitraging strategy that enables an investor to make purchases of a base currency denominated investment at its spot rate. It hedges the resulting foreign exchange risk by performing a forward contract sale in the financial instrument, the sales proceeds once received will be converted back into the investor's base currency. The trade would exploit inconsistencies between interest rates and forward rates to make a riskless-profit.

This covered interest arbitrage is only possible in two cases:

- If the interest rate differential between two countries is less than the difference between the spot and forward exchange rate.
- If the interest differential is greater than the difference between the spot and forward exchange rate.

Uncovered Interest Arbitrage:

'Uncovered Interest Strategy' is an arbitrage strategy in which an investor purchases a base currency denominated investment at lower interest rate. The investor converts it to a foreign currency that offers a higher rate of interest. But, hedging of the resulting foreign exchange risk is not covered by performing a forward contract sale in the financial instrument.

Important points:

Spot Foreign Exchange Rate: The spot rate is the current price of the foreign exchange contract at which a buyer and a seller agree on the specified time and place.

Forward Exchange Contract: A forward contract refers to buy or sell currency contract at a future date.

Base Currency or Domestic Currency: The currency of the domestic country in which a trader or investor is buying or selling. The base currency, or domestic currency, is the first in a currency pair, the second currency is the quoted currency. A currency pair is a quotation featuring two different currencies. For example, in a currency exchange of USD/JPY, the base currency is the U.S. dollar and Japanese yen is the quoted currency.

[24] Covered Interest Arbitrage, http://arbitragestrategy.com/covered-interest-arbitrage-vs-uncovered-interest-arbitrage/, March 31, 2014.

Carry Trade: A 'carry trade' is a strategy in which an investor borrows money at a lower interest rate to invest in a security that provides a higher interest rate.

Hedging: Hedging is a strategy to reduce the risk of price fluctuations in an asset that may be incurred by an investment.

7.8 Interest Rate Parity - Reasons Contributing to IRP Departure

While introducing the topic of interest rate parity, it was mentioned that IRP theory holds good in the absence of a few factors like taxes, capital control and transaction costs. In reality, the presence of these factors allows interest rates and forward premiums to deviate from the covered IRP. Covered IRP does not hold good perfectly because of the following reasons:

- Transaction costs
- Political risks
- Taxes
- Liquidity preference
- Capital controls

7.8.1 Transaction Costs

The process which brings interest rates and exchange rates into line, involves investing in one market and/or borrowing in another, and converting one currency into another. The transaction cost involved in money market operations is the difference between the investment and the borrowing rate. The bid-ask spread is the cost involved in conversion of currencies. The deviations from the IRP must exceed these costs in order to make dealing in the foreign markets (both currency markets and money markets) profitable. Hence, the presence of these costs allows deviations up to the costs involved.

The arbitrage process discussed earlier, also referred to as the round-trip arbitrage, allows the maximum deviations from the parity. This is because the arbitrageur has to bear the bid-ask spread as well as the money market costs. The arbitrageur borrows in one market to invest in the other. While he/she must pay the higher interest applicable to borrowings, he/she receives the lower interest rate applicable to investments. After borrowing one currency, he/she converts it into the other currency, and reconverts the currency on maturity. In the process, he/she receives the lower 'bid' rate while selling, and must pay the higher 'ask' rate while buying a currency. These costs together allow a huge deviation from IRP.

Yet, the process of round-about arbitrage imposes certain limits on these deviations. Let us see how. Let the investment rate in currency A be r_A^I and that in currency B be r_B^I. Let the borrowing rate in the two currencies be denoted by r_A^B and r_B^B respectively. If the arbitrageur borrows in currency A and invests in

currency B, the arbitrage process would be as follows. The arbitrageur would borrow one unit of currency A. This one unit would fetch him

$$\frac{1}{S(A/B)_{ask}} \text{ units of B.}$$

The arbitrageur would invest these units at r_A^I, let's say for one year. At the end of the year, he/she would get

$$\frac{1}{S(A/B)_{ask}} \times (1 + r_B^I) \text{ units of B.}$$

In the forward market, this would fetch

$$\frac{F(A/B)_{bid}}{S(A/B)_{ask}} \times (1 + r_B^I) \text{ units of A.}$$

Since the arbitrageur would borrow at r_A^B, he/she would have to repay

$$\left(1 + r_A^B\right) \text{units of A.}$$

The no-arbitrage condition would be where the arbitrageur cannot make any profit out of the process, i.e. where

$$1 + r_A^B \geq \frac{F(A/B)_{bid}}{S(A/B)_{ask}} \times (1 + r_B^I)$$

This can be rewritten as:

$$r_A^B \geq r_B^I + \left[\frac{R(A/B)_{bid} - S(A/B)_{ask}}{S(A/B)_{ask}}\right](1 + r_B^I) \qquad \text{Eq. (26)}$$

Now, suppose that the arbitrageur borrows in currency B and invests in currency A. For every one unit of currency B borrowed, he/she will get,

$S(A/B)_{bid}$ units of A

When invested in currency A at r_A^I, it will fetch

$S(A/B)_{bid}$ x $(1 + r_A^I)$ units of A.

Converted in the forward market, it will yield

$$\frac{S(A/B)_{bid}}{F(A/B)_{ask}} \times \left(1 + r_A^I\right) \text{ units of B.}$$

Since the arbitrageur borrowed in currency B at r_B^B, he/she will have to repay

$(1 + r_B^B)$ units of B.

Again, the no arbitrage condition would be where the arbitrageur cannot make any profits, i.e. where

$$\frac{S(A/B)_{bid}}{F(A/B)_{ask}} \times (1 + r_A^I) \leq (1 + r_B^B)$$

$$\Rightarrow 1 + r_A^I \leq \frac{F(A/B)_{ask}}{S(A/B)_{bid}} \times (1 + r_B^B)$$

This can be rewritten as:

$$r_A^I \leq r_B^B + \left[\frac{F(A/B)_{ask} - S(A/B)_{bid}}{S(A/B)_{bid}}\right](1 + r_B^B) \qquad \text{(Eq. 27)}$$

Let us see an example.

Suppose

S (₹/$) = 65.40 / 65.75

1 – yr F(₹/$) = 69.65 / 70.15

r_{Rs}^I = 10%

r_{Rs}^B = 15%

$r_{\$}^I$ = 4%

$r_{\$}^B$ = 6%

The covered cost on dollar borrowing would be:

$$0.06 + \left[\frac{70.15\text{-}65.40}{65.40}\right](1+0.06)$$

= 0.1370 = 13.70 % (approx.)

As r_{Rs}^I at 10%, is less than the cost of borrowing dollar funds, no arbitrage opportunity exists.

The covered yield on dollar deposits would be:

$$0.04 + \left[\frac{69.65\text{-}65.75}{65.75}\right](1+0.04)$$

= 0.1017 = 10.17 % (approx.)

Again, as the covered yield on dollar deposits is less than the cost of rupee borrowings (15%), no arbitrage opportunity exists.

Investors and borrowers face a lower cost, in that their decision is affected only by the bid-ask spread. Whichever currency they choose to invest in, investors will receive the rate applicable to investments, which makes the presence of money market costs irrelevant for them. Similarly, the choice of currency is not affected by the money market cost for borrowers, as they must invariably pay the interest rate applicable to borrowings. Both investors and borrowers are, however, affected by bid-ask spreads. If an investor chooses to invest in a foreign currency, he/she will first have to convert his/her domestic currency holdings into foreign currency, and enter an opposite transaction at maturity. This reduces his/her net

returns by the bid-ask spread of the rate quotation he/she is facing. If a borrower decides to borrow in a foreign currency, he/she must first convert it into his/her domestic currency, and then buy it at maturity. This increases his/her cost by the bid-ask margin. Hence, the deviation from the parity should be more than the bid-ask spread, in order to provide a profitable opportunity to the players in these two classes. The deviation allowed by the presence of these players is lesser than that allowed by the round-trip arbitrage process.

The limits imposed by these transactions on the possible deviations can be worked out in the following manner. If an investor decides to invest one unit in currency A, he/she would get

$$(1+r_A^I) \text{ units of A.}$$

If, instead, he/she would like to invest in currency A, he/she would first have to convert his/her holdings into currency B. For every unit of currency A, he/she would get

$$\frac{1}{S(A/B)_{ask}} \text{ units of B.}$$

When invested at r_B^I, this would yield

$$\frac{1}{S(A/B)_{ask}} \times (1+r_B^I) \text{ units of B.}$$

Converted in the forward market, it would be equal to

$$\frac{F(A/B)_{bid}}{S(A/B)_{ask}} \times (1+r_B^I) \text{ units of A.}$$

The market forces would force the two yields to equality. Hence,

$$1+r_A^I = \frac{F(A/B)_{bid}}{S(A/B)_{ask}} \times (1+r_B^I) \qquad \text{(Eq. 28)}$$

Similarly, the borrowing activities of the market players would force the following equality:

$$1+r_A^B = \frac{F(A/B)_{ask}}{S(A/B)_{bid}} \times (1+r_B^B) \qquad \text{(Eq. 29)}$$

As we see, the money market costs are no longer relevant, but deviations from Eq. 14 are still possible due to the bid-ask spread in the forex markets.

One more kind of process is possible in these markets. It involves players who have a pre-set need to convert one currency into another, sometime in the future. Suppose, a person has foreign currency receivables in the future. He/she has two choices. One is that he/she can convert them in the forward market at the forward bid rate. The other option open to him/her, is to borrow in the foreign currency

for a period which matches the maturity of the original receivable (at the foreign currency borrowing rate), convert the proceeds at the spot bid rate, invest the domestic currency equivalent in the domestic money markets at the domestic investment rate, and use the proceeds of the receivable to pay off the foreign currency borrowing. The arbitrageur will, in this case, not face the bid-ask spread, in that he/she will be converting at the bid rate, whether he/she converts spot or forward. He/she will, however, face the money market cost. Similarly, a person having a foreign currency payable in the future may either lock-in his cost through the forward market, or borrow in the domestic markets, convert the proceeds at the spot ask rate, invest in the foreign currency markets, and pay-off the payable from the realizations of the investment. He/she will, thus, face only the money market costs. Hence, the deviations from the parity must exceed the money market costs, to present profitable opportunities to the players. This deviation is again lesser than the one allowed by two-way arbitrage.

The tightest conditions are imposed by the process of one-way arbitrage. This involves the players who need to convert a present holding of the domestic currency into foreign currency in the future, or a future holding of a foreign currency into a domestic currency holding in the present (or vice versa). Let us understand the process in an elaborate manner.

If a person is holding currency A at time t_0, and needs currency B at time t_1, there are two ways in which he/she can make the conversion. He/she can either invest in currency A (at the investment rate) for the required maturity and lock-in the conversion rate at the forward ask rate for currency B, or can convert at the spot ask rate and invest the proceeds in currency B denominated securities (at the investment rate). Going by the first method, for every unit of currency A held and invested at time t_0, the investor gets

$$(1 + r_A^I) \text{ units of A at time } t_1$$

Where r_A^I is the investment rate for currency A

These units will be converted into

$$\frac{\left(1+r_A^I\right)}{F(A/B)_{ask}} \text{ units of B.} \qquad \text{(Eq. 30)}$$

By the second method, each unit of A will get converted into

$$1/S(A/B)_{ask} \text{ units of B at time } t_0$$

These units, when invested, will yield

$$\frac{1}{S(A/B)_{ask}} \times (1 + r_B^I) \qquad \text{(Eq. 31)}$$

The market forces will drive Eq. 30 and Eq. 31 to equality. Hence,

$$\frac{(1 + r_A^I)}{F(A/B)_{ask}} = \frac{(1 + r_B^I)}{S(A/B)_{ask}}$$

$$\Rightarrow (1 + r_A^I) = \frac{F(A/B)_{ask}}{S(A/B)_{ask}} \times (1 + r_B^I) \qquad \text{(Eq. 32)}$$

If the bid-ask spread in the spot and forward market were the same, Eq. 32 would become equivalent to Eq. 14. The transaction costs would become irrelevant, as the investor would have to bear the same cost in the conversion of currencies, whether he/she uses the spot market or the forward market. As he/she pays the ask rate both the ways, the cost would become irrelevant, if both the margins were equal. The money market costs also become irrelevant since the investor earns the investment rate, whichever market he/she invests in. Hence, the transaction costs become irrelevant and IRP holds precisely due to the presence of these players.

In reality, however, the bid-ask spread increases with maturity (as observed in the previous unit). This results in the transaction costs not getting canceled out totally, and leaves scope for a possible deviation from the parity.

We shall now evaluate the other possibility, i.e. a person (e.g., an exporter) expects to receive currency B at time t_1 and needs currency A at time t_0. There are again two ways to do the conversion. The market player can borrow in the foreign market and convert in the spot market, using the receipts in B at t_1 to pay off the borrowing. Otherwise, he/she can borrow in the domestic market and convert the receipts using the forward market, paying off the borrowings from the proceeds. The first way, for every unit of currency A needed at t_0, he/she will have to borrow.

$1/S(A/B)_{bid}$ units of B

At t_1, he/she will have to repay

$$\frac{(1 + r_B^B)}{S(A/B)_{bid}} \text{ units of B} \qquad \text{(Eq. 33)}$$

The second way, for every unit of A borrowed at t^0, the arbitrageur will have to pay at t_1

$(1 + r_A^B)$ units of A

This will require

$$\frac{(1 + r_A^B)}{F(A/B)_{bid}} \text{ units of B} \qquad \text{(Eq. 34)}$$

Again, market forces will drive Eq. 33 and Eq. 34 to equality. So,

$$\frac{(1+r_A^B)}{F(A/B)_{bid}} = \frac{(1+r_B^B)}{S(A/B)_{bid}} \quad \text{(Eq. 35)}$$

Again, the money market costs become irrelevant as the borrowing rate must be paid irrespective of the market borrowed in. Similarly, the forex market costs would no longer be relevant if the bid-ask spreads in the spot and the forward market were the same. In such a situation, Eq. 35 would become equivalent to Eq. 14, and interest parity would hold perfectly. But as we have seen, the spreads increase with maturity, making it possible for the variables to move a bit away from the parity equation, without leaving any scope for arbitrage. However, the departures allowed by these activities are very small, compared to those allowed by round-trip arbitrage or the investment or borrowing processes.

In this way, transaction costs allow for departures from the interest rate parity.

7.8.2 Political Risks

Investment in a foreign currency denominated security can be made in two ways. One is, investing directly in securities issued in the country to which the currency belongs. For example, a US citizen may invest in T-bills issued by the Government of India. The other way is to invest in deposits denominated in the foreign currency held domestically, or in some third country. Here is another example, a French citizen may hold a dollar deposit with a London bank. In the second case, the investor faces only the currency risk. In the first case, the investor faces the political risk as well. It is the risk of any change in the foreign country's laws or policies that affect the returns on the investment. It may take the form of a change in the tax structure, or a restriction on repatriation of proceeds of the investment, or a sudden confiscation of all foreign assets, among other things. This additional risk makes the investors require a higher return on foreign investments than warranted by the interest parity. This factor allows deviations from the parity to take place.

While generally it is the foreign investment which has a higher political risk attached to it, and hence requires a higher return, sometimes it is the other way around. Residents of a country which is politically very unstable may like to invest in a relatively stable country, even when there is an interest disadvantage. This would again allow deviations from the IRP, this time on the other side.

Despite the presence of additional political risk in foreign investments, the presence of third country investors may push the variables towards the parity. This would happen because they may perceive the additional risk as equal between the two countries, and would have to take it on irrespective of which of the two countries they invest in. Hence, they may require an equal risk premium on either side of the parity, thus disallowing any variation from it.

The factor of political risk generally affects only the investment decisions, as no country is likely to change its laws or policies in a way which would make it

difficult for the borrower to repay his/her obligations. Yet, it is a strong enough factor to allow deviations from the parity line.

7.8.3 Taxes

Taxes can affect the parity in two ways – through withholding taxes, and through differential tax rates on capital gains and interest income.

The following section analyzes these factors:

Withholding Taxes

Generally, any resident making a payment to a foreign resident is required to withhold a part of that payment as taxes, and pass it on to the tax authority of his/her country. To that extent, foreign currency earnings of an investor stand reduced, permitting a deviation from the interest parity up to the extent of the tax withheld. Normally, this factor gets canceled out if the investor receives a tax credit from his/her government for the amount paid as withholding taxes. Hence, it affects the parity only if the tax credit is not given, or if it is less than the amount paid as withholding taxes.

Differential Tax Rate

Deviations from the interest parity are possible if the earnings on account of transactions in foreign currency are treated as capital gains, and hence, are taxed at rates different from the rates applicable to interest income. Suppose, an investor pays tax on capital gains at the tax rate t_c, and on normal income at t_y. Then, for that investor the interest parity line will be given by

$$r_A - r_B = \frac{1-t_c}{1-t_y}\left[\frac{F(A/B)-S(A/B)}{S(A/B)}\right]\times(1+r_B) \qquad \text{(Eq. 36)}$$

Hence, if

$$\frac{1-t_c}{1-t_y} > 1$$

i.e., the capital gains tax rate is lower than the income tax rate, then there would be a premium attached to investing in those foreign currencies which are at a premium. Also, borrowers would like to borrow in a foreign currency which is at a discount.

The differential tax structure normally changes the parity line for only those players who need to convert currencies occasionally. The major players in the forex markets, i.e. the banks, do not face this differential tax rate as they frequently deal in the market, and hence, any earnings on account of a change in the exchange rates is taken as a normal business income for them and taxed accordingly. Hence, the IRP is not affected by this factor. As a result, the infrequent players get an arbitrage opportunity which is not available to the major

players. They get a chance to benefit by denominating their investments and borrowings in the currency that provides them the tax advantage.

7.8.4 Liquidity Preference

An asset's liquidity is measured by the quickness with which it can be converted into cash, at the least possible cost. While the time that is taken to liquidate a foreign investment may be the same as that taken for liquidating a domestic investment, the costs involved are different. Suppose, an investment is liquidated before maturity. There will be some costs involved in the process which are likely to be the same for both kinds of investments. But, there is an additional cost involved in liquidating covered foreign investments before maturity. It is the cost of canceling the cover (i.e., canceling the forward contract), which was explained in the previous unit.

The presence of this cost makes the investors require a premium over the interest parity for making foreign investments. The amount of this premium would depend on the liquidity needs of the investors. The higher the expectation that the investment may have to be liquidated before maturity, the more will be the required premium. The possibility of raising short-term finance from alternative sources also influences the required premium. If such alternative sources are available, it is likely to reduce the premium demanded by the investors.

7.8.5 Capital Controls

The factors mentioned above are likely to cause only small deviations from covered interest parity. The most important cause of large deviations from the parity is the presence of capital controls. Capital controls include restrictions on investing or borrowing abroad and on repatriation of investments made by foreign residents. It also includes restrictions on conversion of currencies. These controls restrict the market forces from bringing the interest rates and exchange rates in line with the parity. As a result of these controls, the interest rates in the Euro-market (where these regulations do not apply) are more in line with the parity, than the domestic interest rates in different countries.

Activity 7.2

What do you mean by arbitraging? How do arbitrageurs pose an effect on volatility in exchange rates? Discuss the arbitrage process in line with the interest rate parity theorem.

Answer:

Check Your Progress – 2

6. Which category of a person's decision is affected behind the ruling interest rate on financial assets that denominated in different currencies while transacted?
   a. Investors
   b. Borrowers
   c. Investors and borrowers
   d. Arbitrageurs
   e. Arbitrageurs and borrowers
7. What is the name given to the process of borrowing in one currency and simultaneously investing in another, with the exchange risk hedged in the forward market?
   a. Arbitrage
   b. Covered interest arbitrage
   c. Uncovered interest arbitrage
   d. Interest rate parity
   e. Purchasing power parity
8. Which of the following is a factor that influences deviation from the interest rate parity line, caused due to changes in the foreign country's law or policies, generally affecting only the investment decisions?
   a. Transaction cost
   b. Political risk
   c. Taxes
   d. Capital controls
   e. Liquidity preference
9. Identify the factor (from below options) that influences the traders in foreign exchange market to determine the forward premium and exchange rates.
   a. Settlement rate
   b. Interest rate differential
   c. Real exchange rate
   d. Forward exchange rate
   e. Real interest rate

10 Which of the following statement is true if interest rate parity theory is not applicable due to withdrawal of capital controls?

a. Causes large deviations from parity
b. Restricts on investing or borrowing abroad
c. Restricts on repatriation of investments
d. Restricts on currency conversion
e. Brings interest and exchange rates in line with parity

7.9 Summary

- Though the market forces, if left free, have the potential to bring the prices of various commodities (including money) in line with internationally, various practical factors impede the process.
- The Purchasing Power Parity (PPP) Principle was enunciated by a Swedish economist, Gustav Cassel in 1918. In this theory, the price levels (and the changes in these price levels) in different countries determine the exchange rates of these countries' currencies.
- There are three forms of PPP which emerge from the Law of One Price – the absolute form, the relative form, and the expectations form.
- Product differentiation is another factor which allows different prices to exist for goods produced in different countries.
- Interest Rate Parity (IRP) or the covered interest parity condition, propounds that the cost of money (i.e., the cost of borrowing money or the rate of return on financial investments), when adjusted for the cost of covering foreign exchange risk, is equal across different currencies.
- While the price of commodities across different countries influence the buyers' and sellers' decisions as to where they should transact, the ruling interest rate on financial assets denominated in different currencies affect investors' and borrowers' decisions regarding the market they would like to transact in.
- The presence of factors such as taxes, political risks, transaction costs etc. allows interest rates and forward premiums to deviate from the covered IRP.
- Despite these factors, a long-term trend is observed whereby the various variables are generally seen moving towards the parities.
- Hence, these parities are also considered along with other factors by the market players, while trying to forecast exchange rates.

7.10 Glossary

Arbitrage is the process of buying a product in one market and selling it in another, and thereby making a profit.

Convertible Currency means a currency that is freely convertible to any other currency. Based on the transactions for which such conversion is allowed, the currency may be either convertible on the capital account or on the current account.

Covered Interest Arbitrage is the act of making riskless profits by exploiting the lack of synchronization between the forward premium/discount on a foreign currency and the difference between the interest rates in the two countries.

Forward Premium refers to the difference between the spot price and the forward price of a currency expressed in percentage terms, with the forward price being higher than the spot price.

Inflation is a general rise in prices across a wide range of goods and services. It can be described as a loss in the purchasing power of money, meaning in theory you can no longer buy what you used to with the same amount of cash.

Interest Rate Parity is the condition under which the premium on a foreign currency is equal to the interest rate differential between the two countries.

Law of One Price states that the price of a commodity should be the same across nations.

Purchasing Power Parity Theorem propounds that the purchasing power of all the currencies in the world should be the same. It has three versions – absolute, relative and expectations form.

Real Exchange Rate is the nominal exchange rate between two currencies adjusted for the price movements in the two countries over a period.

Spot Exchange Rate means, the exchange between a pair of currencies on any day – delivery of funds on the same day.

7.11 Self-Assessment Test

1. Briefly explain the underlying assumptions of "Law of One Price".
2. Describe in detail the three forms of 'Purchasing Power Parity' theorem (PPP).
3. Enumerate the influential factors that disturb the nature and scope of 'Purchasing Power Parity' (PPP) theorem.
4. "The equivalent to PPP in the financial markets is a theory called the 'Interest Rate Parity' (IRP) or the covered interest parity condition." Elucidate.
5. How does 'Interest Rate Parity' theorem differ from 'Purchasing Power Parity' theorem? Explain.
6. State the relationship between PPP and IPR.
7. Discuss in detail the reasons behind the exit of Interest Rate Parity (IPR) theorem.

7.12 Suggested Readings/Reference Materials

1. Francis Cherunilam, International Business - Text and Cases, 6th Edition, PHI Learning.
2. P G Apte (2020), International Financial Management, McGraw Hill Education (India) Private Limited.
3. Vyuptakesh Sharan, International Financial Management [Kindle Edition], 6th edition, PHI Learning.
4. Madhu Vij (2021). International Financial Management – Text and Cases. 4th edition. Taxmann
5. Charles W. L. Hill, G. Tomas M. Hult (2021). International Business. 12th edition. McGraw Hill Education (India) Private Limited.
6. Choel S. Eun & Bruce G. Resnick (2022). International Financial Management. 8th edition. McGraw Hill Education (India) Private Limited.
7. K. Aswathappa (2020). International Business. 7th edition. McGraw Hill Education (India) Private Limited.

7.13 Answers to Check Your Progress Questions

1. (b) 1918

The 'Purchasing Power Parity' (PPP) principle was enunciated by a Swedish economist, Gustav Cassel in 1918. According to this principle, the price levels (and the changes in these price levels) in different countries determine the exchange rates of these countries' currencies.

2. (c) There are no transaction costs involved in buying and selling of goods.

The 'Law of One Price' assumes that there is no restriction on the movement of goods between countries. The law would hold perfectly if there were no transportation costs involved. There are no transaction costs involved in the buying and selling of goods. The existence of tariffs distorts the 'Law of One Price', which requires their absence to hold perfectly and according to the law, in equilibrium conditions. The price of a commodity must be the same across the world.

3. (b) Absolute

The absolute form of PPP describes the link between the spot exchange rate and price levels at a point of time. On the other hand, the relative form of PPP talks about the link between the changes in spot rates and in price levels over a period.

4. (b) ₹ 69.23

90 (100/130) = ₹ 69.23 for 10 RMBs

5. (a) Price indexes

Price indexes used in different countries are based on different baskets of commodities, with the proportions of the commodities in accordance with the usage and taste of the residents of the particular country. When these indexes are used to measure the movement in price levels, the results do not conform to PPP.

6. (c) Investors and Borrowers

In IRP theory, the price of commodities across different countries influence the buyers' and sellers' decisions as to where they should transact, the ruling interest rate on financial assets denominated in different currencies affect investors' and borrowers' decisions regarding the market they would like to transact in.

7. (b) Covered Interest Arbitrage

The process of borrowing in one currency and simultaneously investing in another, with the exchange risk hedged in the forward market is referred to as covered interest arbitrage.

Here, the arbitrageur would borrow in the domestic currency, convert it into foreign currency at the spot rate, invest the proceeds in foreign currency denominated securities, and cover the principal and interest from this investment at the forward rate, thus locking his/her domestic currency returns.

8. (b) Political Risk

The factor of political risk generally affects only the investment decisions, as no country is likely to change its laws or policies in a way which would make it difficult for the borrower to repay his/her obligations. It is the risk of any change in the foreign country's laws or policies that affect the returns on the investment. Yet, it is a strong factor to allow deviations from the parity line.

9. (b) Interest rate differential

The forward premium is the equivalent of differences between interest rates on two currencies, known as the interest rate differentials. The effect of equalization process is described in terms of quantum of change that will occur depending on the liquidity of the individual markets. Throughout the world, the spot market and the money market are generally observed to be more liquid than the forward market. This makes the forward market absorb most of the required changes.

10. (e) Brings interest and exchange rates in line with parity

The significant cause of large deviations from the parity is the presence of capital controls. Capital controls include restrictions on investing or borrowing abroad and on repatriation of investments made by foreign residents. It also includes restrictions on conversion of currencies. These controls restrict the market forces from bringing the interest rates and exchange rates in line with the parity.

Unit 8

Exchange Rate Forecasting

Structure

"A flexible exchange rate is important, and it shouldn't be artificially restrained because of the needs of the economy"

- Elvira Nabiullina (Russian economist and head of the Central Bank)

8.1 Introduction

A floating exchange rate can foster greater stability of inflation and output and the topic deals with floating exchange rates.

In the previous unit, we have studied that a plethora of factors affecting the levels and movements in exchange rates, are often in a conflicting manner. Several theories were propounded to explain these effects. Though a consistent prediction of the exact level of future exchange rates is impossible, these theories help in forecasting the possible direction of the movement. Such forecasting is very important for players in the international markets, as the exchange rates have a great impact on their profits. Another set of players for whom correct exchange rate forecasting is vital, are the speculators. Their forecasts about the movements in exchange rates propel them to undertake speculative activities, especially when their expectations are against those of the market. Though speculators are generally ill-known for the destabilizing effects of their

activities on financial markets, they are the liquidity providers to the markets. Also, as their views are generally opposite to the market's views, they stabilize the markets by forming the other (than the market's) side of the demand-supply forces.

This unit deals with forecasting techniques used in exchange rate determination.

8.2 Objectives

After studying this unit, you should be able to:

- Discuss the nature of 'Forward Rate' being used as 'Predictive Tools' for exchange rate forecasts
- Give a detailed note on demand-supply approach used to forecast exchange rates
- Explain the corrective mechanism and assumptions behind the monetary theory
- State the functions of asset approach to forecasting techniques
- Describe the implications of 'Portfolio Balance Theory
- Discuss the role of news that acts as a determinant to expected currency changes
- Explain the scope of Technical Analysis in forecasting exchange rates

8.3 Forward Rate as a Predictor

The forward rate is expected to be an unbiased predictor of the future exchange rate. There are two criteria for judging the effectiveness of a forecasting tool – its accuracy and its unbiasedness. A forecasting tool is said to be accurate if the forecast generated proves to be in accordance with the actual future values of the concerned variable, with minor forecasting errors. An unbiased estimate is where the probability of an overestimate is the same as the probability of an underestimate. This makes the forecast accurate on an average.

Various empirical studies have concluded that forward rates are indeed unbiased predictors of future spot rates, where the markets are competitive. For the market to be competitive, the concerned currencies should be freely floating and heavily traded. The presence of central bank intervention reduces the efficiency of the market. There is no evidence to support that the forward rates are accurate predictors of future rates. One possible reason for the inaccuracy of the forward rates is that at any point of time, the forward rate reflects expected developments in the variables affecting the exchange rates. On the other hand, all the expected and unexpected developments affect the actual future spot rates. As the unexpected developments cannot be factored in the forward rates, the estimates based on these are normally inaccurate. Due to this, the shorter the time gap, the more accurate the forecast based on forward rates is expected to be. Further, a speculator who takes a forward position runs the risk of losing if the actual spot

rate turns out to be adverse. Hence, the risk undertaken tends to be compensated with a risk premium.

When the forward exchange rate is higher than the current spot rate in the forex market, there exists a forward premium. Higher the premium, higher will be the forward rate of exchange and vice versa.

Example: Forward Premiums Drop to Record Low

The expected developments in the markets affect the actual future spot rates, in foreign exchange market and forward rates can be forecasted accurately, in the short run. There is a drop in forward premiums across maturities, which predicts that the forward exchange rates are likely to be benign, in the near term. The main reasons for anticipated drop in premium are the market intervention strategy taken up by the Reserve Bank of India (RBI) and the expectation of narrowing the rate differential, between US and Indian bonds. Falling forwards premium is an incentive for importers to cover their unhedged positions and lower their import cost.

Source-https://www.business-standard.com/article/finance/fall-in-onshore-forward-premiums-could-push-indian-rupee-even-lower-122062300581_1.html dated 23rd June, 2022, Accessed on 1st December, 2022

8.4 The Demand-Supply Approach

It has been mentioned in the previous units that a currency's exchange rate is determined by the overall supply and demand for that currency. According to this view, changes in exchange rates can be forecasted by analyzing the factors that affect the demand and supply of a currency. Since these factors are listed out in the balance of payments account, this approach is also referred to as the 'balance-of-payments approach'.

Currency's exchange rate is determined by the overall supply and demand for that currency and exchange rates can be forecasted by analysing the factors that affect the demand and supply of a currency.

Example: Rupee Weakens Against Dollar

IFA Global reported that the Indian rupee slipped against the dollar, when foreign banks stepped in to purchase dollars on behalf of oil marketing companies, as there was sharp rise in Brent crude oil prices. The rupee touched a record low of ₹ 78.39 against the dollar. Further fall in onshore forward premiums could push Indian rupee even lower On 8th March 2022, the rupee touched 77 mark against the US dollar as crude oil prices shot up and to arrest the demand of $, the Reserve Bank of India (RBI) has sold up to $1.5 billion in the spot market.

Source-https://www.business-standard.com/article/finance/fall-in-onshore-forward-premiums-could-push-indian-rupee-even-lower-122062300581_1.html dated 23rd June, 2022, Accessed on 1st December, 2022

When the exchange rates are fixed, the effect of other factors is balanced by official demand or supply, which helps in preventing the movement of the exchange rates. In case of a flexible exchange rate regime, however, any change in other factors results in a movement in the exchange rate. Since it is the flow of payments into and out of a country caused by these factors which is recorded in the BoP account, a forecast of exchange rate movements based on this approach considers the flow of demand and supply of currencies. Let us now see how exchange rate movements can be forecasted in accordance with this approach.

The demand curve of a currency is mainly derived from the country's supply curve of exports. The supply of a currency is derived mainly from the country's imports. Other factors affecting the value of a currency are trade in services, income flows (i.e. flows on account of interest, dividends, rents, and profits), transfer payments and foreign investments. While an exogenous increase in exports has the effect of appreciating the domestic currency, an exogenous rise in imports results in depreciating the local currency. A change in the level of trade in services has a similar effect.

As mentioned previously, income flows depend on past investments and the current rate of return that can be earned on these investments. Hence, an expected change in the rate of returns can be used to predict the direction of exchange rates. Any change resulting in a reduction of an inflow would depreciate a currency, while a reduction of an outflow would appreciate the domestic currency.

Similarly, an increase in net transfers out of the country results in depreciation of the currency and vice versa. An increase in the net inflows because of foreign investments has two effects. While the domestic currency appreciates at the time of the inflow, its supply increases in the future periods because of the interest, dividends, profits or rent earned by that investment and repatriated. The two factors affect the forecast of the exchange rates in the relevant periods accordingly. Another important factor needed to be considered here is the expected change in earnings from foreign investments. Earnings from foreign investments have two components – the interest rate or the income out of the investment itself, and the expected income arising from a change in the value of the currency (which would be realized at the time of liquidation of the investment). The second component is affected by any expected change in the value of the currency. Hence, if a country's currency is expected to appreciate in the future, it is likely to attract more foreign investment, thus resulting in the currency's appreciation now. So, a future expectation of a change in the currency's value gets reflected in a current change in its value.

Let us now understand how other economic variables are expected to influence the exchange rates. One of the most important economic variables affecting exchange rates is the relative price levels in the respective countries. According to this approach, a relatively higher inflation affects the relative prices of that

country's exports and imports. This leads to a reduction in the exports and an increase in the imports, thus depreciating the currency. This approach, thus, supports the PPP. It also supports the IRP, as it says that an increase in domestic interest rates would attract more foreign investments, thus resulting in an appreciation of the currency.

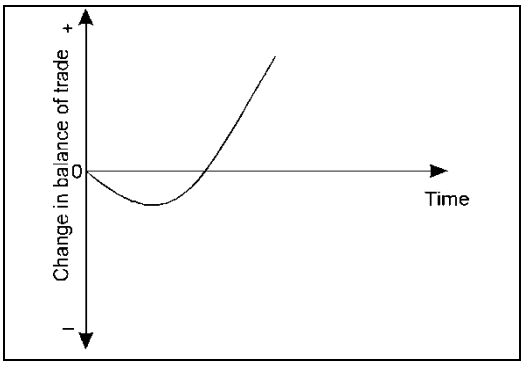
An increase in the national income or the GNP increases the spending capacity of the residents of a country. This results in an increased demand, both for domestically produced goods and imports. With exports remaining at the same level, the current account worsens. This makes the currency of that country depreciate.

According to this theory, an increase in money supply also has a negative effect on the value of a currency. An increase in money supply will mean that more money will be chasing the same amount of goods (as the increase in the production of goods will not take place in the short run). This would cause the price level to increase. A higher inflation will depreciate the local currency.

An important aspect of this theory is that the mechanism employed to explain exchange rate changes implies that any change in the value of a currency is only an instrument to correct the temporary imbalance in the system. For example, if a currency depreciates due to the country experiencing a relatively higher inflation than its trading partners, the depreciation reduces the foreign currency price of the country's exports. Thereby, restores the competitiveness of the exports. At the same time, the imported goods are made more expensive by the depreciation, thereby reducing imports. This improves the current account balance. But, sometimes it is observed that this does not happen. Despite the depreciation, the current account balance continues to worsen. This results in instability in the exchange markets as well. This phenomenon is called the J-curve effect. According to J-curve effect, when both imports and exports are price inelastic in the short run but price elastic in the long run, volume of exports and imports do not immediately respond to the change in relative prices of exports and imports, caused by depreciation of home currency. This leads to deterioration in the Balance of Trade (and hence, BoP), for the home country. This makes the currency depreciate further. This happens because it takes people some time to adjust to the change in relative prices. Despite a higher price of imports, people change-over to import substitutes only after a time lag. Similarly, it takes time for the producers of exported goods to increase their production of these goods, and for the foreign consumers to start consuming more of these goods. Till such time that the exports go up and the imports come down, the trade balance continues to worsen and the domestic currency continues to depreciate. After this time lag, the current account balance improves and the exchange rate stabilizes. In elasticity of export supply and import demand curves also explain the opposite phenomenon – the trade balance continuing to become stronger despite an

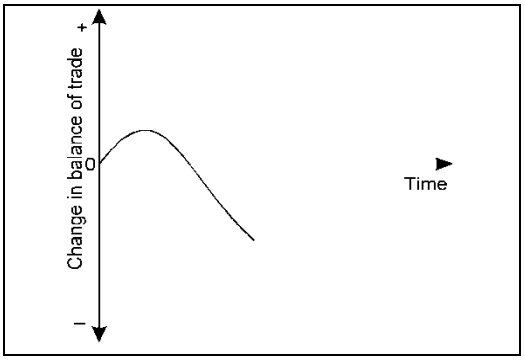
appreciation of the currency. These two conditions are shown in Figure 8.1 and Figure 8.2. As can be observed, the path followed by the trade balance forms a J (an inverse J in the latter case), thus giving its name to this phenomenon.

Figure 8.1: The J Curve after Depreciation



Source: ICFAI Research Center

Figure 8.2: The J Curve after Appreciation

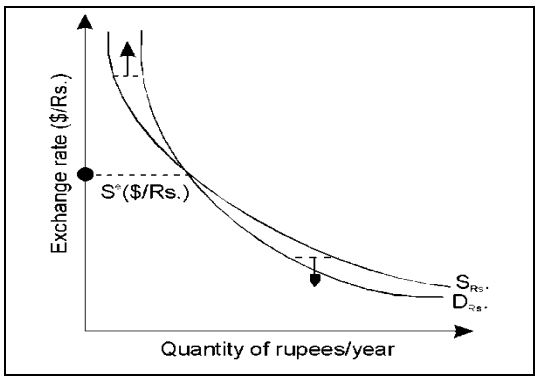


Source: ICFAI Research Center

When the import demand and the export supply curves behave in the manner as implied by these figures, the supply curve of the currency becomes downward sloping (instead of the upward sloping curve). This introduces instability in the exchange markets. Let us see how. Consider Figure 8.3. The S_{Rs} and the D_{Rs} represent the supply and demand for Rupee against the Dollar, with the equilibrium exchange rate between the Dollar and the Rupee being represented by $S^e(\$/₹)$. According to this figure, any small appreciation in the value of the Rupee (i.e. an upward movement of the exchange rate from the equilibrium exchange rate) results in the demand for Rupees exceeding the supply, and hence a further appreciation of Rupee. Similarly, any small depreciation of Rupee sees a higher supply of Rupee than the demand, and hence a further depreciation. This makes the exchange markets extremely unstable. Now consider Figure 8.4. Here, despite the supply curve being downward sloping, any movement of the exchange rate away from the equilibrium results in the market forces forcing it back to equilibrium point. An appreciation of the Rupee sees a higher supply than

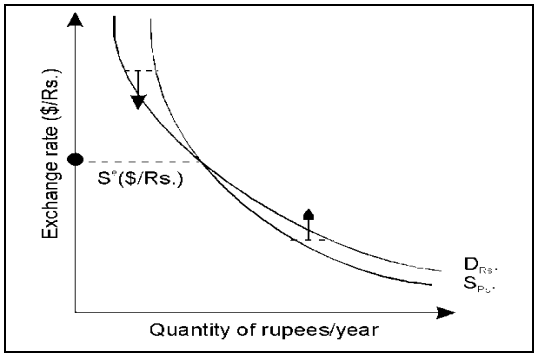
demand, thus lowering the exchange rate. Depreciation faces a higher demand, forcing the exchange rate to move up. In this figure, the forex markets are stable despite a downward sloping supply curve of the currency. This is so because in Figure 8.4, the demand curve is flatter, and hence more elastic than the supply curve. It is the opposite case in Figure 8.3. It follows that for the exchange markets to be unstable, the demand curve for a currency must be relatively less elastic than the supply curve, with the supply curve being downward sloping. This happens when the import demand curve is inelastic, with the export supply curve being even more inelastic. If the export supply curve is less inelastic than the import demand curve, the increase in the value of exports would more than compensate the short run increase in the value of imports (with the value of imports increasing due to the increase in price of imports more than offsetting the decrease in the quantity of imports due to the inelasticity). In the opposite case, the increase in the value of the exports would not be able to compensate the increase in the value of imports, thus giving rise to the J-curve and instability in the exchange markets. When represented in terms of elasticities of export supply and import demand curves, the conditions state that the two elasticities should together be greater than one to avoid exchange market instability. This is called the Marshall-Lerner condition.

Figure 8.3: Unstable Market



Source: ICFAI Research Center

Figure 8.4: Stable Market



Source: ICFAI Research Center

As we know from observing the actual happenings in the markets, all market movements are not observed to be in accordance with the demand-supply view. A few of the divergences are explained by the following theories. These theories state that the value of a currency is determined by its stock and the desire of people to hold this stock, in place of other goods. These theories differ in the other goods being considered by them. We start by discussing the monetary approach.

As per interest rate parity theory (IRP), a hike/ fall in interest rate is accompanied by a corresponding hike/ fall in the forward premium/ discount on a currency.

Example

Assume that the spot rate of $ = ₹ 80, as on July 2022 and the prevailing rate of interest at Mumbai is 8% & in New York it is 4%, in July 2022

The forward premium, 3 months from July 2022 will be as follows.

The operation is for10,000 $ and the entire gain/ loss is on customer's account.

Transaction process:

Purchase 10,000 $ & invest for 3 months in N Y Bank, while borrowing money to pay for 10,000 $ in Mumbai.

Interest on 10,000 $ in US Market @ 4% for 3 months is 100 $ and the amount is 10,100 $

Interest payable for borrowed money in Mumbai for 10,000 $ @ 8 % for 3 months is as follows:

Convert $ to ₹ @ spot rate of ₹ 80/ $

$ 10,000 in invested in Indian ₹ is = 10,000 X 80 / US$= ₹ 8,00,000

Interest earned on ₹ 8,00,000 = ₹ 16,000 @ 8% for 3 months

Calculations:

(8,00,000 X 8/ 100) per annum = ₹ 64,000 and for 3 months= 16,000

Interest @ 8% of 3 months if invested in a bank is ₹ 16,000 and amount is 8,16,000

This amount should be equal to 10,100 $ as $ 10,000 is invested in US bank @ 4 % for 3 months which fetches $ 100 towards interest.

Thus $ 10,100 = ₹ 8,16,000

Therefore, the spot 3 months hence should be 8,16,000 / 10,100 = 80.79 / US$ and the **forward premium is 0.79**.

Assume that the prevailing rate of interest at Mumbai is 8% & New York is 6 % due to increase in FED rate

Adopting the same method as above, the forward premium 3 months hence is as follows:

The operation is for10,000 $ and the entire gain/ loss is on customer's account.

Transaction process.

Purchase 10,000 $ & invest for 3 months in N Y Bank, while borrowing money to pay for 10,000 $ in Mumbai.

Interest on 10,000 $ in US Market @ 6 % for 3 months is 150 $ and the amount is 10,150 $

Interest payable for borrowed money in Mumbai for 10,000 $ @ 8 % for 3 months is as follows:

$ 10,000 invested in Indian ₹ is = 10,000 X 80 / US$= ₹ 8,00,000 = ₹ 16,000

Interest @ 8% of 3 months, if invested in a bank, is ₹ 16,000 and amount is 8,16,000

This amount should be equal to 10,150 $

Thus 8,16,000= 10,150 $

Therefore, the spot 3 months hence should be 8,16,000 / 10,150 = 80.39 / US$ and the **forward premium is 0.39**.

Hence, the forward premium decreases with increase in interest rates as per IRP theory and vice versa.

Activity 8.1

As a stock market analyst, how would you assess the aftermath of demonetization in India posing challenges to Indian currency exchange rates against EUR and USD in terms of demand-supply approach?

Answer:

Check Your Progress - 1

1. What is inferred from an unbiased estimate that makes the forecast accurate on average?
   a. Where the probability of an overestimate is same as the probability of an underestimate
   b. Where the probability of an overestimate is opposite to the probability of an underestimate
   c. Where the probability of an overestimate is inversely related to the occurrence of probability
   d. Where the probability of an overestimate is likely different to the probability of an underestimate
   e. Where the probability of an underestimate is inversely related to the occurrence of probability
2. What is the demand-supply approach?
   a. Balance-of-Payments approach
   b. Efficient hypothesis approach
   c. PPP approach
   d. Economic approach
   e. IRP approach
3. What should be increased to increase in spending capacity of the residents of a country?
   a. National income
   b. International income
   c. Individual income
   d. Purchasing power
   e. Inflation
4. What proposed by the J curve effect in short run and in long run in the volume of exports and imports, that lead to deterioration in the balance of trade for the home country?
   a. Elasticity in price, elasticity in quantity
   b. Elasticity in quantity, price elastic
   c. Inelasticity in price, price elasticity
   d. Inelasticity in demand, elasticity in quantity
   e. Inelasticity in supply, price elastic

5. Which of the following are the two components that measure the earnings from foreign investments to the home country?
   a. Interest rate or income out of foreign investments and expected income from changes in currency value
   b. Expected change is rate of return and expected income form changes in currency value
   c. Increase in volume of exports and decrease in volume of imports
   d. Expected income from changes in currency value and decrease in volume of imports
   e. Increase in volume of exports and interest rate or income out of foreign investments

8.5 The Monetary Approach

The monetary approach assumes that PPP holds good, i.e. an increase in the price level results in the depreciation of a country's currency and vice versa. Using this assumption, this theory arrives at a few results that are diametrically opposite to that given by the demand-supply approach.

Let us start with an increase in the real GNP (the real product) of a country. As the real product increases, so do the transactions and the demand for money needed to be held for making purchases. Hence, an increase in the real GNP results in an increase in the real money demand. Due to this, lesser money is left for purchase of goods, services, and bonds. With no change in the money supply, this brings down the price levels. With a reduction in the demand for bonds, the bond prices also go down, resulting in an increase in the nominal interest rates. Since this approach assumes PPP to hold good, a reduction in the price levels brings about an appreciation of the currency. Hence, an increase in the real GNP brings about an appreciation of the currency. This is in contrast with the predictions of the demand-supply theory.

The theory also outlines the correction mechanism in the system. With a fall in the price level, the real money demand stands reduced. At the same time, a rise in the interest rates increases the opportunity cost of holding money, thus reducing the real demand for money. This leaves people with more money to spend on goods and services, thus increasing the price levels. This makes the currency appreciate.

There is another route through which a growth in real GNP affects the exchange rate. As we have seen, a rise in the real GNP increases the real demand for money. Much of this increased demand, which is not satisfied through an increase in the money supply, is satisfied through a current account surplus. This makes the currency appreciate.

Let us see the effect of an increase in money supply. Such an increase induces people to spend more on goods and bonds. This increases the price levels and reduces the nominal interest rates. The higher price level makes the currency depreciate.

The predictions of the monetary theory can be summarized as follows:

- An increase in the real GNP of a country causes its currency to appreciate. It follows that out of two countries, the country having a higher growth in the GNP will see its currency appreciating against the other country's currency.
- An increase in real money demand makes the currency appreciate.
- An increase in nominal interest rates causes the currency to depreciate (as seen in the correction mechanism). This again goes against the predictions of the demand-supply approach.
- An increase in the money supply causes the currency to depreciate.

This theory also analyzes the effects of expected inflation. Expected inflation leads to higher nominal interest rates (since the nominal interest rate includes a premium for inflation). This causes a depreciation of the currency. The PPP says that inflation causes a currency to depreciate. According to the monetary approach, the effect on the exchange rates is immediate, rather than happening after the inflation takes place.

Exchange Rate Volatility

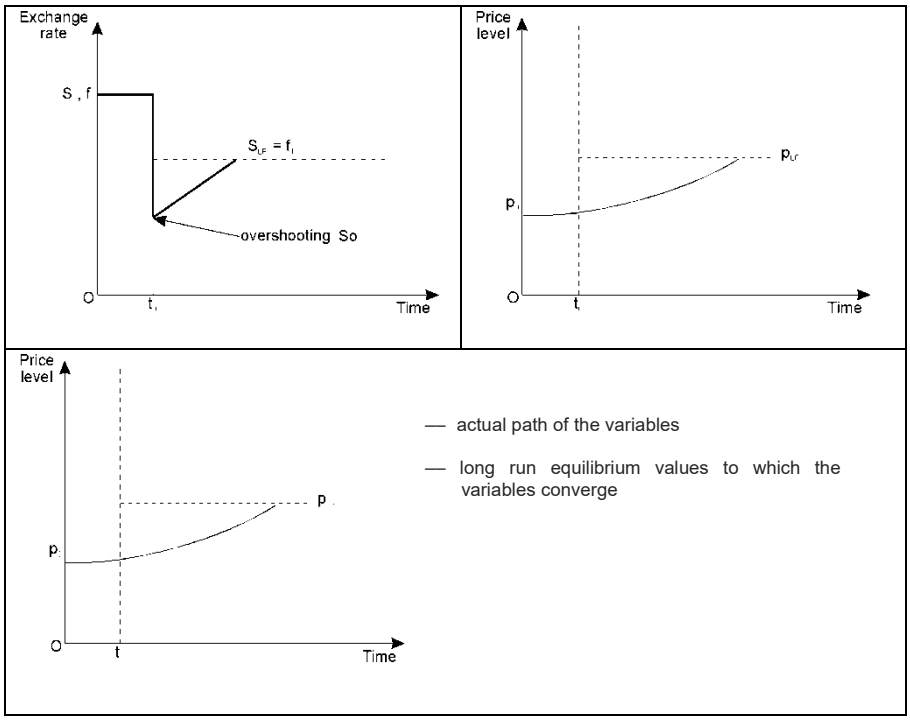
An important phenomenon observed is that of overshooting of exchange rates, i.e. exchange rates changing more than that required by a change in an economic variable and later coming back to the new equilibrium. This phenomenon is explained by the 'Dornbusch Sticky-Price Theory'.

Suppose, there is an increase in the money supply. This should increase the price level in the economy and the currency should depreciate accordingly. But it is often observed that the immediate depreciation in the currency is much more than that warranted by the models, with the currency appreciating after some time to reach the new equilibrium level. According to this theory, this happens due to the stickiness of the prices of some goods. This theory states that while the prices of traded goods change quickly in accordance with the change in the money supply, the prices of non-traded goods are sticky in the short run and take some time to adjust. Since the prices of all the goods do not change up to the required level, the demand for money does not increase enough to become equal to the supply of money. Hence, to restore equilibrium to the money markets, the interest rates fall. This leads to an increase in the money demand and restores equilibrium.

A fall in the interest rates has an interesting effect on the exchange rates. According to the interest rate parity theory, a fall in interest rate is accompanied

by a corresponding fall in the forward premium/discount on a currency. This can happen either through the forward rate or through the spot rate. As the prices of the non-traded goods are expected to rise eventually, the future spot rates are expected to weaken in accordance with PPP. This expected change in the future spot rate gets reflected in a weaker current forward rate for the currency. With the premium on a currency (given by 'f – 's') having to fall and the forward rate weakening (represented by a higher 'f'), the spot rate would have to weaken more than the forward rate (i.e. 's' will have to increase by more than the increase in 'f'). This results in the spot rate depreciating by more than that required, and hence overshooting. Later, as the prices of non-traded goods change in accordance with the increase in the money supply, the demand for money rises and the interest rates fall. This makes the spot rate appreciate towards the equilibrium level, eventually reaching it. This phenomenon is reflected in Figure 8.5.

Figure 8.5: Forward and Spot Exchange Rates, Interest Rate, and Price Level Path Following Increase in Domestic Money Supply



Source: ICFAI Research Center

8.6 The Asset Approach

This approach is also referred to as the efficient market hypothesis approach. It does not talk about the effect of changes in the basic economic variables on the exchange rates. According to this approach, whatever changes are expected to occur in the value of a currency in future (whether based on the monetary theory

or the demand-supply theory or any other approach), gets reflected in the exchange rates immediately. That is, any expected change gets absorbed immediately. Hence, the current exchange rate is the reflection of the expectations of the market.

This theory states that new information about the factors likely to affect exchange rates comes to the market in a random manner. The market quickly absorbs this news. The efficient working of the market assumes that there are many participants in the market whose aim is to maximize their profits. Through their profit-maximizing activities, the participants ensure that the market quickly absorbs all available information. There is one category of players in the currency markets, though, whose aim is not to maximize profits from currency movements. They are the central banks. The presence of central banks comes in the way of existing exchange rates reflecting the expected values of currencies truly.

This approach explains the implications of fiscal and monetary policy on exchange rates. Since a fiscal deficit is expected to increase the money supply levels sometime in the future, an increasing fiscal deficit is likely to trigger off an immediate depreciation of the currency, even without an immediate increase in the money supply. Similarly, an expected increase in the money supply through the monetary policy would cause the currency to depreciate immediately.

The current exchange rate is the reflection of the expectations of the market.

Example: Dollar Jumps after Fed Pulls Interest Rate Hikes into 2023

The value of $ shot up to a near six-week high after the Federal Reserve brought forward its projections for the interest rate hikes into 2023. The dollar index, was up 0.63% at 91.10, for the anticipated interest hike for 2023. Against the Japanese yen, the dollar rose 0.39% to 110.49 yen, New Zealand dollar down 0.98% at $0.7049, Australian dollar up 0.95% at $0.7612

Though the Fed's statement does not mean a change in policy, the market reaction to the expectation in interest hike has reflected, in the exchange rates across the globe. The projections showed the outlook for inflation, though the price increases were still described as transitory.

Source: https://www.reuters.com/business/dollar-holds-below-one-month-high-currency-markets-wait-fed-2021-06-16/ dated 17th June, 2022, Accessed on 18th July, 2022

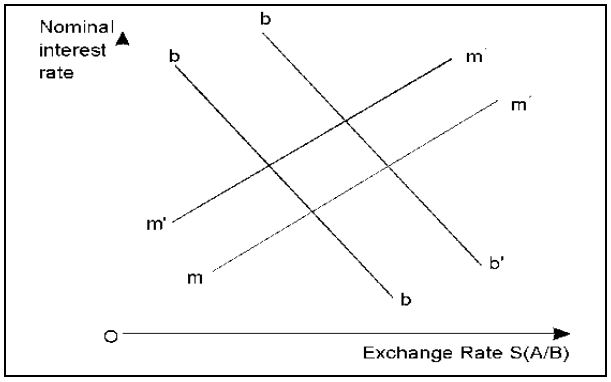
8.7 Portfolio Balance Approach

The portfolio balance approach states that two factors determine the value of a currency – the relative demand and supply of money and the relative demand and supply of bonds. According to this approach, people can hold assets across different countries, denominated in different currencies (mainly in the form of currencies and bonds). Hence, any change in exchange rates changes the wealth

of the holders of these assets, which becomes an instrument for maintaining equilibrium in money and bond markets.

According to this theory, interest rates and exchange rates are linked in the manner as shown by Figure 8.6.

Figure 8.6: Portfolio Balance Model



A – Home currency; B – Foreign Currency

Source: ICFAI Research Center

In Figure 8.6, interest rates are shown on the y-axis, and the exchange rate on the x-axis, with a movement towards the right reflecting depreciation of the home currency. Curve 'bb' represents the combinations of interest rates and exchange rates for which the bond market is in equilibrium, with curve 'mm' representing those combinations for which the money markets are in equilibrium. As interest rates rise, the demand for bonds increases. With the supply of bonds not changing, this results in an excess demand. This demand can be reduced by reducing the wealth of the portfolio holders. A reduction in the wealth would induce portfolio holders to demand less of everything, including bonds. This is achieved through an appreciation of the domestic currency. The appreciation reduces the real wealth of the portfolio holders in domestic currency terms. Hence, appreciation of the domestic currency accompanies an increase in interest rates to maintain the equilibrium in the bond market. This makes curve 'bb' downward sloping. At the same time, an increase in interest rates means a lower demand for money. With money supply being constant, this results in an excess supply of money. To bring the money markets back to equilibrium, the demand for money needs to be increased. This can happen if the real wealth of portfolio holders increases through a depreciation of the domestic currency. The increase in the wealth induces higher demand for everything, including money. Hence, depreciation of the domestic currency accompanies an increase in the interest rates to maintain the equilibrium in the money markets. This makes curve 'mm' upward sloping.

The equilibrium level of interest rates and exchange rates are determined by the interplay of money market and bonds market, represented by the two curves in the figure. The theory goes on to assume that any change in money supply is

effected via open-market operations by the government (or the central bank), thus changing the supply of bonds. Let us suppose there is a reduction in the money supply. This would be done by the government selling bonds in the market. The reduced money supply would shift the 'mm' curve upwards since the interest rate would increase for every level of exchange rate. The increase in the bonds' supply would shift curve 'bb' to the right as at every level of exchange rate, portfolio holders would require increased interest rate. While this reduction in the money supply will result in an increase in interest rates, the effect on exchange rates would depend upon the degree to which the two curves would shift, and hence could be in any direction. If curve 'bb' shifts more than curve 'mm' (which is the case in Figure 8.5), then there would be a depreciation of the currency. If, however, the opposite is true, the currency will appreciate. In any case, the appreciation in the currency will be less than that predicted by the monetary approach, i.e. the one arrived at without considering the bond markets.

If the money supply increases through a purchase of bonds by the government, the 'mm' curve will shift downwards and the 'bb' curve will shift to its left. This will be because the increased money supply and the reduced supply of bonds will reduce the interest rates at every level of exchange rates. If 'mm' curve shifts more than 'bb' curve, the currency will depreciate. In the other case, the currency will appreciate. In any case, the depreciation will be less than that predicted by the monetary approach.

Next, the theory provides an explanation for a change in the value of a currency arising from a change in the real GNP. A higher real GNP creates a higher demand for both money and bonds. The higher demand for money increases interest rates and hence, shifts 'mm' curve upwards. The higher demand for bonds reduces the interest rates and hence, shifts curve 'bb' to the left. Both the shifts result in an appreciation of the currency, which is higher than that predicted by the monetary theory. But here, the effect on interest rates is ambiguous and depends on the quantum by which the two curves shift.

Higher demand for bonds reduce the interest rates and vice versa.

Example: The Bond Market is Torn Over the Potential for Higher Inflation and Lower Growth

The future of US economy is uncertain as there is volatility in government bonds coupled with slower growth and no immediate relief from inflation. This has impacted the yield on treasury bonds.

Anticipating higher interest rate to contain inflation, bonds have lost the flavour for investors. The bond market is also taking a cautious view with lower yield.

Source: https://www.cnbc.com/2021/07/21/the-bond-market-is-torn-over-the-potential-for-higher-inflation-and-lower-growth.html dated 21st July, 2021, Accessed on 18th July, 2022

8.8 The Role of News as a Determinant

The models discussed above show how expected changes are factored into exchange rate forecasts. Despite an understanding of these models, exchange rate forecasting is not very easy, often because of the conflicting interpretations provided by these approaches. One more factor that contributes to unpredictability of exchange rates is news. News, as per its definition, is something unexpected. Unexpected happenings keep on occurring, as we notice in our day-to-day lives. Since these events are unexpected, so is their effect on exchange rates. As many of the events can often not be forecasted, so are the associated changes in exchange rates. For example, the British Pound (GBP) has been consistently on the decline since the results of the British (UK) referendum became clear on 23 June 2016 to exit from EMU. An initial sharp drop has been followed by several slumps and a persistent overall decline, leaving GBP to EUR (-15) per cent than pre-referendum levels and GBP to USD and GBP to Australian Dollar (AUD) down by (-17) per cent immediately after the vote. The triggering of Article 50 on 29th March 2017 has made the Pound to fall sharply against the EUR, plunging from EUR 1.15771 to the GBP to lows of EUR 1.14532 overnight.

News also explains why PPP does not always hold good. Even as an unexpected event occurs, the forex markets quickly absorb it and change accordingly. But the real markets are slow to absorb the news. Hence, there are divergences from PPP till the real markets adjust. In periods when a lot of unexpected events take place, this divergence becomes quite ambiguous.

Exchange rate forecasting is not very easy, often because of the conflicting interpretations and the news, which acts as determinant.

Example: US Inflation Outpaces India's, while the Dollar is Getting Stronger than the Rupee

The US is suffering from worst bout of elevated inflation at 9.1 percent in June 2022, which has outstripped many emerging-market economies, including India. This impact on US currency has to adjust the $ down, but $ still is maintaining its supremacy.

There is a strong belief that any adverse developments in the US economy would hurt other countries more than the US itself and has been explained in few articles. The difference between inflation in 2022 and in the past has been unprecedential and a geopolitical shock. Inflation far in excess of the Fed's mandate of 2 percent is a crisis, which has prompted the central bank to shed its balance sheet and hike policy rates faster than expected.

The Fed's withdrawal has put an end to the dollar glut and made the dollar a rarer-than-before currency. An increase in policy rates mean that dollar assets

are the safest in the world and will offer superior returns and thus the news analysis could be a determinant for $ getting stronger.

Source: https://www.moneycontrol.com/news/business/markets/us-inflation-outpaces-indias-so-why-is-the-dollar-still-strong-8829021.html dated 15th July, 2022, Accessed on 18th July, 2022

Activity 8.2 Bring out the instances of how RBI's intervention in forex reserves and interest rate changes had caused subsequent changes in the Indian currency exchange rates. **Answer:**

8.9 Technical Analysis

Forecasting future exchange rates with the use of past exchange rate movements is called technical analysis. The forecasters are called technicians. A pure technician is he/she, who believes that clues in the past movements lead him/her to the future. Economic factors such as inflation rates, interest rates, balance of payments and political stability are ignored by pure technicians. A technician believes that exchange rate movements are predictable by using the data on historical movements, the contention being that irrespective of factors that contribute, the impact of all such factors is finally reflected in prices. Technicians develop their own forecasts about future currency values and each technician has his individual method. There are many methods used by technicians such as sophisticated statistical models, charts of past exchange rate movements, etc. Some technicians give simple recommendations about future forex movements. Most technicians use historical data for primary analysis and then make a forecast by keeping in view the economic and political factors.

Evaluation of Technical Forecasts

Economists do not like technical analysis as it does not obey the principles of Economics. The logical explanation given by economists in support of their view is that according to efficient market hypothesis, prices reflect all available information. In an efficient forex market, the impact of available information is already reflected in the present rates. Therefore, historical data does not help develop accurate forecasts. Technical analysts are viewed by these economists as astrologers of marketplace though they are often able to give more accurate predictions than those given by any economic forecasting model or highly sophisticated statistical model of exchange rate forecasting.

Economic research indicates that forex movements follow a pattern of random walk. That implies that a specific present change is unrelated to past changes and is, therefore, unforecastable. The explanation given by economists is that current exchange rates change with the unforeseeable events in the market and the present rates reflect all foreseeable events. The unforeseeable events occur in a random fashion. Hence, exchange rate changes follow a random pattern. Technical analysts assert that their approach works and it is very difficult to disapprove their assertions. To prove the efficiency of technical analysis, it is necessary to prove that technical analysis yields better forecasts than forward market forecasts. No known technical forecast till date meets this standard. Technical forecasts are often used in conjunction with economic model based forecasts. But technical forecasts are widely used by speculators in the forex markets to book quick profits since technical forecasts emphasize on short-term exchange rates.

Forecasting future exchange rates with the use of past exchange rate movements is technical analysis.

Example: 2022-2023 Foreign Exchange Rate Forecasts: Socgen Update

The analyst team of Socgen (Société Générale S.A., a French multinational investment bank and financial services company) forecasts the following based on the past exchange rate movements, the present fundamentals, and global economic scenario:

- US currency will gain further support and the dollar is more likely to peak
- The dollar is expected to hold gains till summer and will start to change after the summer, with the dollar more likely to lose ground
- The US currency is likely to lose ground from the third quarter of 2022, as rates peak.
- EUR/USD to rise to 1.20 by Q2 2023.
- Sterling remains vulnerable due to weak fundamentals.
- GBP/USD forecast of a rise from 1.20 to 1.31 by the middle of 2023 is based on dollar losses.
- After initial difficulties, commodity currencies are also forecast to benefit from a dollar dip.

Source: https://www.exchangerates.org.uk/news/36060/2022-07-06-2023-foreign-exchange-rate-forecasts-socgen-update.html dated 6th July, 2022, Accessed on 18th July, 2022

Check Your Progress - 2

6. Which of the following approach assumes that PPP holds good when an increase in the price level results in the depreciation of a country's currency and vice versa?

a. Asset
b. Monetary
c. Demand-Supply
d. Portfolio balance
e. Technical

7. Which of the following statements is contradictory to the monetary theory?
   a. Increase in country's real GNP causes its currency to appreciate
   b. Increase in real money demand causes currency to depreciate
   c. Increase in nominal interest rates causes the currency to depreciate
   d. Increase in money supply causes currency to depreciate
   e. Expected inflation leads to higher nominal interest rates
8. Which of the following approach explains the implications of fiscal and monetary policy on exchange rates?
   a. Asset
   b. Monetary
   c. Demand-Supply
   d. Portfolio balance
   e. Technical
9. The portfolio balance approach states that two factors determine the value of a currency. What are they?
   a. Relative supply of money and relative demand of bonds
   b. Relative demand money and relative supply of bonds
   c. Relative demand and supply of money and relative demand and supply of bonds
   d. Relative demand and supply of money and relative demand bonds
   e. Relative supply of money and relative supply of bonds
10. Which of the following approaches explains a change in the value of currency arising from a change in the real GNP?
   a. Technical analysis
   b. Asset
   c. Monetary
   d. Portfolio-balance
   e. News as a determinant

8.10 Summary

- Different models of exchange rate determination predict different effects of changes in various economic variables on the exchange rates. Though conflicting, all these effects are observed in real-life situations.

- The final effect of a change in an economic variable is a combination of the predictions of the various theories, and is also dependent on the situation of the moment.
- Though this makes exchange rate forecasting a Herculean task, the theories discussed in the chapter do provide some guidance, and hence, make essential reading for a student of international finance.
- It is fair to say that forecasts made by using economic indicators do help in having a long-term view, which is supplemented by technical analysis which helps in having a short-term view.

8.11 Glossary

Asset Approach, also referred to as efficient market hypothesis approach, states that expected changes in value of currency in future get reflected in the exchange rates immediately.

Balance of Trade is the difference in value between a country's imports and exports.

Economic Variable is a measurement that helps to determine how an economy functions. Examples include population, poverty rate, inflation, and available resources.

Forward Rate Agreement is an agreement under which the seller assures the buyer certain interest rate on a notional sum for a pre-determined term, which is with reference to a pre-selected market rate, at the end of a specified period. The difference between the agreed rate and the actual market rate prevailing at the end of the specified period is paid by the seller to the buyer if the agreed rate is higher than the market rate, and vice versa.

Gross National Product (GNP) is a total value of nation's total economic activity. It is the value of all finished goods and services produced in a country in a particular year plus the income earned by its citizens (including income of those located abroad), minus income of non-residents located in that country.

J-Curve Effect is the phenomenon of a country's trade balance worsening despite a depreciation of its currency, before it starts improving.

Monetary Approach assumes that PPP holds goods when increase in price level causes depreciation in country's currency and vice versa.

Purchasing Power Parity (PPP) is a way of measuring economic variables in different countries so that irrelevant exchange rate variations do not distort comparisons.

Spot Rate is the rate quoted today for a currency to be delivered after two working days.

Technical Analysis refers to the method of forecasting future exchange rates with the use of past exchange rate movements.

8.12 Self-Assessment Test

1. Give a brief note on forward rate used as a predictive tool in forecasting exchange rates.
2. How does demand-supply approach assist in determining the future exchange rates? Explain.
3. Explain the scope and functions on monetary theory causing volatility in exchange rates.
4. How does monetary approach differ from asset approach? Illustrate.
5. Explain the underlying principles and assumptions of portfolio balance theory.
6. "Forecasting future exchange rates with the use of past exchange rate movements is called as technical analysis". Elucidate.

8.13 Suggested Readings/Reference Materials

1. Francis Cherunilam, International Business - Text and Cases, 6th Edition, PHI Learning.
2. P G Apte (2020), International Financial Management, McGraw Hill Education (India) Private Limited.
3. Vyuptakesh Sharan, International Financial Management [Kindle Edition], 6th edition, PHI Learning.
4. Madhu Vij (2021). International Financial Management – Text and Cases. 4th edition. Taxmann
5. Charles W. L. Hill, G. Tomas M. Hult (2021). International Business. 12th edition. McGraw Hill Education (India) Private Limited.
6. Choel S. Eun & Bruce G. Resnick (2022). International Financial Management. 8th edition. McGraw Hill Education (India) Private Limited.
7. K. Aswathappa (2020). International Business. 7th edition. McGraw Hill Education (India) Private Limited.

8.14 Answers to Check Your Progress Questions

1. (a) Where the probability of an overestimate is same as the probability of an underestimate

A forecasting tool is said to be accurate if the forecast generated proves to be in accordance with the actual future values of the concerned variable, with minor forecasting errors. An unbiased estimate is where the probability of an overestimate is the same as the probability of an underestimate. This makes the forecast accurate on an average.

2. (a) Balance-of-Payments approach

According to demand-supply approach, changes in exchange rates can be forecasted by analyzing the factors that affect the demand and supply

of a currency. Since these factors are listed out in the balance of payments account, this approach is also referred to as the balance-of-payments approach.

3. (a) National income

An increase in the national income or the GNP increases the spending capacity of the residents of a country. This results in an increased demand, both for domestically produced goods and imports.

4. (c) Inelasticity in price, price elasticity

According to J-curve effect, when both imports and exports are price inelastic in the short run but price elastic in the long run, volume of exports and imports do not immediately respond to the change in relative prices of exports and imports, caused by depreciation of home currency. This leads to deterioration in the Balance of Trade (and hence, BoP) for the home country.

5. (a) Interest rate or income out of foreign investments and expected income from changes in currency value

Earnings from foreign investments have two components – the interest rate or the income out of the investment itself, and the expected income arising from a change in the value of the currency (which would be realized at the time of liquidation of the investment).

6. (b) Monetary

The monetary approach assumes that PPP holds good, i.e. an increase in the price level results in the depreciation of a country's currency and vice versa. Using this assumption, this theory arrives at a few results that are diametrically opposite to that given by the demand-supply approach.

7. (b) Increase in real money demand causes currency to depreciate

An increase in real money demand makes the currency appreciate. The theory outlines that with a fall in the price level, the real money demand stands reduced and at the same time, an increase in the interest rates increases the opportunity cost of holding money, thus reducing the real demand for money. This leaves people with more money to spend on goods and services, thus increasing the price levels. This makes the currency appreciate.

8. (a) Asset

Asset approach explains the implications of fiscal and monetary policy on exchange rates. Since a fiscal deficit is expected to increase the money supply levels, an increasing fiscal deficit is likely to trigger off an immediate depreciation of the currency, even without an immediate

increase in the money supply. Similarly, an expected increase in the money supply through the monetary policy would cause the currency to depreciate immediately.

9. (c) Relative demand and supply of money and relative demand and supply of bonds

The portfolio balance approach states that the value of a currency is determined by two factors – the relative demand and supply of money and the relative demand and supply of bonds.

10. (d) Portfolio-balance

Portfolio-balance theory provides an explanation for a change in the value of a currency arising from a change in the real GNP. A higher real GNP results in a higher demand for both money and bonds.

International Finance

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