CTM
CERTIFICATE IN INTEGRATED TREASURY MANAGEMENT

Session 7- Foreign Exchange Management

Agenda

- Exchange rate quotations,
- Common currency symbols,
- Direct and indirect quotes,
- American terms, European terms, cross rates,
- Bid and Ask rates, Mid rate, Spread and its determinants,
- Spot markets, Forward Markets, Premium and Discounts,
- Various practices of writing quotations,
- Calculating broken period forward rates,
- Speculation and arbitrage,
- Forex futures and Currency Options
- Practice Numerical

Exchange Rate Quotations

☐ Currency pairs and the rate of exchange Every foreign exchange transaction is an exchange between a pair of currencies.

☐ Each currency is denoted by a unique three-character International Standardization Organization (ISO) code (e.g. GBP represents sterling and USD the US dollar).

☐ Currency pairings are expressed as two ISO codes separated by a division symbol (e.g. GBP/USD), the first representing the "base currency" and the other the "secondary currency" or "quoted currency"

☐ The rate of exchange is simply the price of one currency in terms of another.

☐ Base currency is the one you are buying or selling

Exchange Rate Quotations

☐ For example GBP/USD = 1.5545 denotes that one unit of sterling (the base currency) can be exchanged for 1.5545 US dollars (the secondary currency).

☐ Exchange rates are usually written to four decimal places, with the exception of Japanese yen which is written to two decimal places.

☐ The rate to two (out of four) decimal places is known as the "big figure" while the third and fourth decimal places together measure the "points" or "pips".

☐ For instance, in GBP/USD = 1.5545 the "big figure" is 1.55 while the 45 (i.e. the third and fourth decimal places) represents the points

Common Currency Symbols

- USD : US Dollar
- HKD : Hong Kong Dollar
- EUR : Euro
- JPY : Japanese Yen
- GBP : British Pound
- CHF : Swiss Franc
- CAD : Canadian Dollar
- SGD : Singapore Dollar
- AUD : Australian Dollar
- RMB : Chinese Renminbi
- INR : Indian Rupee

Direct and Indirect Quotes

Direct Quotes

◦ Gives the units of currency of domestic country per unit of a foreign currency

◦ Price of foreign currency is quoted in terms of home currency.

◦ In this system variable units of home currency equivalent to a fixed unit of foreign currency are quoted.

◦ Domestic currency is quoted currency For Eg – USD/INR = 45.30 Rs. / $

Indirect Quotes

◦ Gives the units of currency of foreign country per unit of the domestic currency

◦ Price of home currency is quoted in terms of foreign currency

◦ In this system variable units of foreign currency equivalent to a fixed unit of home currency are quoted.

◦ Foreign currency is the quoted currency For Eg – INR/USD = 0.0220 $ / Rs.

American terms/ European terms/ Cross Rates

☐ Exchange rate quoted in American Terms
  ◦ USD becomes the quoted currency.
  ◦ For Eg – INR/USD = 0.0220 $ / Rs.

☐ Exchange rate quoted in European Terms
  ◦ USD becomes the base currency
  ◦ For Eg – USD/INR = 45.30 Rs. / $
  ◦ Or USD/CHF = 1.4550 CHF/$

☐ Cross Rate
  ◦ Quotation between two non dollar currencies
  ◦ For Eg – GBP/INR = 90.4587 Rs./pound

Cross Rates

◻ USD is the most widely traded currency and is often used as the vehicle currency

◻ This helps in reduction of no. of quotes in the market, as exchange rate between two currencies can be determined through their quotes against the USD.

◻ Any quote not against the USD is a 'Cross Quote'

◻ Availability of USD quote for all currencies can help in determining the exchange rate for any pair of currencies by using the cross rate

◻ For eg. Cross quote for EUR/GBP =

◻ EUR/USD * USD/GBP

Bid and Ask Rates

 Bid rate
◦ Price at which the forex dealer is willing to buy a unit of the base currency
◦ As a customer this will be the price at which you will sell the currency

 Ask rate/offer rate
◦ Price at which the forex dealer is willing to sell a unit of the base currency
◦ As a customer this will be the price at which the currency is offered to you or at which you buy.

 Eg – USD/CHF = 1.4550/1.4560

Spread

⬜ Spread or dealer's margin or cost of transaction is the difference between bid price and ask price

⬜ If exchange rate quotation is given in "direct quote" form, bid rate < ask rate, and vice versa as the dealer will want to make a profit on currency dealing

⬜ Eg – USD/CHF = 1.4550/1.4560 , (the spread is 10 pips). It may be shortened to 1.4550/60

⬜ In Sweden, USD/SEK = 8.9595/10 means 8.9595/8.9610

⬜ In Japan, USD/JPY = 106.98/05 means 106.98/107.05

⬜ Calculating spread and percentage spread ∘ For Direct quotes, Spread = Ask Price-Bid Price ∘ Percentage Spread = (Ask Price – Bid Price)/ Ask Price * 100

Determinants of Spread

- Liquidity/trading volume in the market; high volume, lower spread; as cost of service per unit falls
- Nature of the organization making quotes (bank vs. money changer or finance company)
- Overall perception of the dealer about the conditions of the economy and the forex market
- Size of the transaction
- Number of players, time of the day etc
- Currency rate volatility.
- In the United States, spreads tend to be narrowest in the New York morning-Europe afternoon period, when the biggest markets are open and activity is heaviest. Bid-ask spread is widest in the late New York afternoon, when European and most large Asian markets are closed.
- In India the spread is set by Foreign Exchange Dealers Association of India

Mid Rate and Spread Given

☐ A term used to describe the average rate agreed upon when conducting foreign exchange.

☐ The middle rate is calculated using the average of the bid and offer rates.

☐ The middle rate is the average of bid and ask rates.

☐ For direct quotes, ∘ S(bid) = M - c ∘ S(ask) = M + c ∘ Where, M= Mid rate and c = one side average spread or cost of transaction
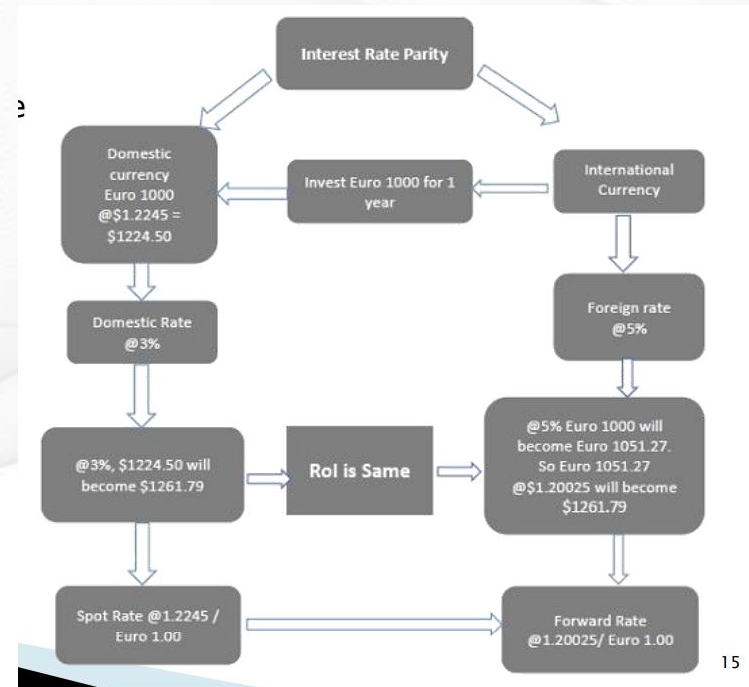
Interest Rate Parity

☐ Interest Rate Parity (IRP) is a theory in which the differential between the interest rates of two countries remains equal to the differential calculated by using the forward exchange rate and the spot exchange rate techniques.

☐ Interest rate parity connects interest, spot exchange, and foreign exchange rates. It plays a crucial role in Forex markets.

☐ According to this theory, there will be no arbitrage in interest rate differentials between two different currencies and the differential will be reflected in the discount or premium for the forward exchange rate on the foreign exchange.

☐ The size of the forward premium or discount on a foreign currency is equal to the difference between the spot and forward interest rates of the countries in comparison.

Interest Rate Parity

☐ Let us consider investing € 1000 for 1 year. As shown in the figure below, we'll have two options as investment cases −

Let the spot exchange rate be $1.2245 / €1
1 year forward rate at $1.20025/€1

Covered Interest Rate Parity (CIRP)

☐ According to Covered Interest Rate theory, the exchange rate forward premiums (discounts) nullify the interest rate differentials between two sovereigns.

☐ In other words, covered interest rate theory says that the difference between interest rates in two countries is nullified by the spot/forward currency premiums so that the investors could not earn an arbitrage profit.

Forward Rate = Spot Rate X (1 + Interest Rate of Overseas country) (1 + Interest Rate of Domestic country)

Covered Interest Rate Parity (CIRP)

Example

☐ As an example, assume Country X's currency is trading at par with Country Z's currency, but the annual interest rate in Country X is 6% and the interest rate in country Z is 3%. All other things being equal, it would make good sense to borrow in the currency of Z, convert it in the spot market to currency X and invest the proceeds in Country X. However, to repay the loan in currency Z, one must enter into a forward contract to exchange the currency back from X to Z. Covered interest rate parity exists when the forward rate of converting X to Z eradicates all the profit from the transaction.

☐ Since the currencies are trading at par, one unit of Country X's currency is equivalent to one unit of Country Z's currency. Assume that the domestic currency is Country X's currency. Therefore, the forward price is equivalent to 0.97, or $1 * (1 + 3\%) / (1 + 6\%)$

Uncovered Interest Rate Parity (UIP)

☐ Uncovered Interest Rate theory says that the expected appreciation (or depreciation) of a particular currency is nullified by lower (or higher) interest.

Implications of IRP Theory

☐ When domestic interest rate is below foreign interest rates, the foreign currency must trade at a forward discount.

☐ If a foreign currency does not have a forward discount or when the forward discount is not large enough to offset the interest rate advantage, arbitrage opportunity is available for the domestic investors. So, domestic investors can sometimes benefit from foreign investment.

☐ When domestic rates exceed foreign interest rates, the foreign currency must trade at a forward premium. This is again to offset prevention of domestic country arbitrage.

☐ When the foreign currency does not have a forward premium or when the forward premium is not large enough to nullify the domestic country advantage, an arbitrage opportunity will be available for the foreign investors. So, the foreign investors can gain profit by investing in the domestic market

Interest Rate Parity

☐ Spot exchange rate between the U.S. dollar and the British pound is currently £1.00 = $2.00

☐ One-year forward rate: £1.00 = $1.90.

☐ Nominal interest rates on one-year government bonds are 5% in both Britain and the United States and that there is zero probability that either government will default.

☐ Can you think of a sure-fire arbitrage opportunity here?

Interest Rate Parity

☐ Sell £1000.00 of U.K. bonds and then convert the funds into U.S. dollars and purchase $2000.00 of U.S. bonds.

☐ As the interest rate is the same on both bonds there will be no gain in interest.

☐ In one year the principal and interest on your U.S. investment will be $2100.00.

☐ Enter into a forward contract to sell $2100.00 for £1105.26 one year from now at the forward exchange rate of £1.00 = $1.90.

☐ You will have made a sure gain of £55.26 on top of the £50 interest that you would have obtained had you left the funds in the U.K. This represents a profit of 55.26/1050 or about 5 percent

Interest Rate Parity

☐ The relationship between the forward discount on a currency in terms of another currency and the interest rates on equally-risky bonds denominated in the two currencies can therefore be expressed

☐ id - i f = Ψ

☐ id and i f are the domestic and foreign interest rates and Ψ is the forward discount on the domestic currency.

☐ id - i f = Ψ + ρd (country risk)

Interest Rate Parity

☐ Suppose that the interest rate in Great Britain is 7 percent per year and there is a one-year forward premium on the New Zealand dollar of 3 percent. The interest rate in New Zealand will therefore be 4 percent per year.

☐ True

☐ False

Interest Rate Parity

 Suppose that the current spot price of the U.S. dollar in terms of the Japanese yen is ¥300 = $1 and that you expect the spot price of the dollar in terms of the yen to be ¥280 = $1 one year from now. Suppose further that interest rates in the two countries on what you believe to be equally risky securities are the same. On the basis of this information you should

☐ 1. shift funds from dollars to yen and sell yen forward

☐ 2. shift funds from dollars to yen.

☐ 3. sell dollars forward for yen

☐ 4. shift funds from yen to dollars and sell dollars forward

International Finance – Forex Intervention

☐ Foreign exchange intervention is a monetary policy of a nation's central bank. It is aimed at controlling the foreign exchange rates so that the interest rates and thereby the inflation in the country is kept under control.

☐ Many developed countries nowadays believe in non-intervention. It has been backed by research that intervention may not be a good policy for the developed economies.

☐ Foreign exchange intervention is an intervention of the central bank of a nation to influence the monetary fund's-transfer rate of the national currency.

☐ Central banks generally intervene in the Forex market to increase the reserves, stabilize the fluctuating exchange rate and rectify misalignments. The success of intervention depends on the sterilization of the impact, and the general government macroeconomic policies.

International Finance – Forex Intervention

☐ There are mainly two difficulties in an intervention process. They are the determination of the timing and the amount.

☐ These decisions are often a judgment and not a set policy. The reserve capacity, the country's exact type of economic troubles, and its fluctuating market conditions affect the decision-making process.

☐ Forex interventions can be risky because it can degrade the central bank's credibility in case of a failure.

Why Forex Intervention

☐ To adjust the volatility or to change the level of the exchange rate.

☐ Excessive short-term volatility diminishes market confidence and affects both the financial and the real goods markets.

☐ In case of instability, exchange rate uncertainty results in extra costs and reduction of profits for companies.

☐ Investors do not invest in foreign financial assets and firms do not trade internationally.

☐ Exchange rate fluctuation affects the financial markets and thereby threatens the financial system.

☐ The government's monetary policy goals become more difficult to attain. In such situations, intervention is necessary.

☐ During change of economic condition and when the market misinterprets the economic signals, foreign exchange intervention rectifies the rates so that overshooting can be avoided.

Non - Intervention

 Today, forex market intervention is hardly used in developed countries. The reasons for non-intervention are −

 Intervention is only effective when seen as preceding interest rate or other similar policy adjustments.

 Intervention has no lasting impact on the real exchange rate and thus on competitive factors for the tradable sector.

 Large-scale intervention diminishes the effectiveness of monetary policy.

 Markets can absorb and manage enough shocks – "guiding" is unnecessary

Direct Intervention

☐ Direct currency intervention is generally defined as foreign exchange transactions that are conducted by the monetary authority and aimed at influencing the exchange rate.

☐ Depending on the monetary base changes, currency intervention can be broadly divided into two types: sterilized and non-sterilized interventions. ☐ Sterilized intervention

☐ Sterilized intervention influences the exchange rate without changing the monetary base. There are two steps in it. First, the central bank buys (selling) foreign currency bonds with domestic currency. Then the monetary base is sterilized by selling (buying) equivalent domestic currency-denominated bonds.

☐ The net effect is the same as a swap of domestic bonds for foreign bonds without money supply changes. The purchase of foreign exchange is accompanied by a sale of an equivalent amount of domestic bonds, and vice versa.

Direct Intervention

☐ The sterilized intervention has little or no effect on domestic interest rates. However, sterilized intervention can influence the exchange rate through the following two channels −

☐ The Portfolio Balance Channel − In the portfolio balance approach, agents balance their portfolios of domestic currency and bonds, and foreign currency and bonds. In case of any change, a new equilibrium is reached by changing the portfolios. Portfolio balancing influences the exchange rates.

☐ The Expectations or Signalling Channel − According to the signaling channel theory, agents see exchange rate intervention as a signal for a change of policy. The change of expectation affects the current level of the exchange rate.

Direct Intervention

☐ Non-sterilized intervention

☐ Non-sterilized intervention affects the monetary base. The exchange rate is affected due to purchase or sale of foreign money or bonds with domestic currency.

☐ In general, non-sterilization influences the exchange rate by bringing changes in the monetary base stock, which, in turn, changes the monetary assets, interest rates, market expectations and finally, the exchange rate.

☐ Indirect intervention

☐ Capital controls (taxing international transactions) and exchange controls (restricting trade in currencies) are indirect interventions. Indirect intervention influences the exchange rate indirectly.

Exchange Rate Forecast: Models

☐ Purchasing Power Parity Model

☐ The purchasing power parity (PPP) forecasting approach is based on the Law of One Price.

☐ It states that same goods in different countries should have identical prices.

☐ For example, this law argues that a chalk in Australia will have the same price as a chalk of equal dimensions in the U.S. (considering the exchange rate and excluding transaction and shipping costs). That is, there will be no arbitrage opportunity to buy cheap in one country and sell at a profit in another.

☐ Depending on the principle, the PPP approach predicts that the exchange rate will adjust by offsetting the price changes occurring due to inflation.

Exchange Rate Forecast : Models

☐ For example, say the prices in the U.S. are predicted to go up by 4% over the next year and the prices in Australia are going to rise by only 2%. Then, the inflation differential between America and Australia is: 4% − 2% = 2%

☐ According to this assumption, the prices in the U.S. will rise faster in relation to prices in Australia. Therefore, the PPP approach would predict that the U.S. dollar will depreciate by about 2% to balance the prices in these two countries.

☐ So, in case the exchange rate was 90 cents U.S. per one Australian dollar, the PPP would forecast an exchange rate of − (1 + 0.02) ✖ (US $0.90 per AUS $1) = US $0.918 per AUS $1

☐ So, it would now take 91.8 cents U.S. to buy one Australian dollar.

Exchange Rate Forecast : Models

- Relative Economic Strength Model
- The relative economic strength model determines the direction of exchange rates by taking into consideration the strength of economic growth in different countries. The idea behind this approach is that a strong economic growth will attract more investments from foreign investors. To purchase these investments in a particular country, the investor will buy the country's currency – increasing the demand and price (appreciation) of the currency of that particular country.
- Another factor bringing investors to a country is its interest rates. High interest rates will attract more investors, and the demand for that currency will increase, which would let the currency to appreciate.
- Conversely, low interest rates will do the opposite and investors will shy away from investment in a particular country. The investors may even borrow that country's low-priced currency to fund other investments. This was the case when the Japanese yen interest rates were extremely low. This is commonly called carry-trade strategy. 34

Exchange Rate Forecast : Models

☐ Econometric Models

☐ It is a method that is used to forecast exchange rates by gathering all relevant factors that may affect a certain currency.

☐ It connects all these factors to forecast the exchange rate. The factors are normally from economic theory, but any variable can be added to it if required.

☐ From a research, one found out that the most influential factors affecting fx are: the interest rate differential (INT), the GDP growth rate differences (GDP), and the income growth rate (IGR) differences.

☐ The econometric model he comes up with is −

☐ USD/CAD (1 year) = z + a(INT) + b(GDP) + c(IGR)

Exchange Rate Forecast : Models

☐ Time Series Model

☐ The time series model is completely technical and does not include any economic theory. The popular time series approach is known as the autoregressive moving average (ARMA) process.

☐ The rationale is that the past behavior and price patterns can affect the future price behavior and patterns. The data used in this approach is just the time series of data to use the selected parameters to create a workable model.

Forex Market

☐ Forex rates can be quoted as spot or, forward contracts. When buyers and sellers agree to trade at the current exchange rate for immediate delivery, it is known as spot transaction or cash transaction. The word "immediate" has different meaning in this case. It can go upto maximum of two days.

☐ In Forex market dialect, the trade date is the day on which both parties agree to buy and sell.

☐ The settlement date/value date is the day on which funds are actually   transferred between the buyer and seller.

☐ Transactions can be ∘ Cash (trade date is the same as the settlement date) ∘ Spot ∘ forward

Spot Market / Spot Exchange Rates

☐ A spot rate is the exchange rate which is valid for a transaction (purchase of currency A and sale of currency B) that must be concluded within the next two working days.

☐ Thus the value date (i.e. the day of actual delivery of currencies) of a transaction performed on a Monday is Wednesday. For Thursday it is Monday (weekend days are not counted).

☐ With the advancement in communication technology and electronic fund transfer mechanism, settlement date is narrowing down to trade date

☐ In India delivery under spot transaction can be:

Type	Description
Ready or cash	The transaction to be settled on the same day
Tom	The delivery of foreign exchange to be made on the day next (tomorrow) to the date of transaction.
Spot	Delivery of foreign exchange would take place on the 2nd working day from the trade date.

Forward Market/ Forward Exchange Rates

☐ In a forward contract both parties enter into a contract on a given day and lock in a fixed rate on specific future date.

☐ In such types of contract, the terms of the purchase (buy or sell) are agreed up front (trade execution date) but actual exchange take place on a date in the future (maturity date).

☐ Suppose on trade date, the Indian exporter agrees to sell EURO 1000 and receive INR 72450. On the maturity date, he delivers EURO 1000 and receives INR 72450. Such types of forward contracts are known as outright forward contracts (OFTs).

Types of Forward Contracts

☐ Forward contracts can be many types depending on the rigidness associated with the maturity date.

☐ In a Fixed Maturity Contract, the maturity date is fixed. The payment and receipt happens on the maturity date.

☐ Partially Optional Contracts provide some flexibility. In such type of contract, there are three dates, trade execution date, option start date and maturity date. On the trade execution date, two parties agree to exchange and the rate of exchange is fixed. In addition, the parties can settle the transaction any time during the option start date and on/ before maturity date. In other words, in this contract, the maturity date spans across days rather than a single day.

☐ In Fully Optional Contract, the contract may end anytime during the life of the contract i.e, anytime during trade execution date and maturity date.

☐ Like the spot contracts, in forward contracts, the actual settlement happens within two-business day from the maturity date.

Forward Market Premium/ Discount

☐ A foreign currency is said to be selling at a forward discount when forward price of the foreign currency is lower in terms of the domestic currency than its spot rate.

☐ Conversely, a foreign currency is said to be selling at a forward premium when its forward price in terms of domestic currency is higher than the spot price

☐ If, USD/INR (S) = Rs. 31.9812/$ and USD/INR (F) = Rs. 32.1345/$, the foreign currency is at a premium and domestic currency is at a discount.

☐ Premium/discount = [F(bid) – S(bid)]/S(bid) *100

☐ Annualized Premium/discount = [F(bid) – S(bid)]/S(bid) *12/N *100 when quotes are in months (N = Months)

☐ Annualized Premium/discount = [F(bid) – S(bid)]/S(bid) *360/ND *100 when quotes are in days (ND=No of days)

☐ Dollar/yen: 109.50

☐ 90 D Forward 109.38

☐ Annualized Forward Premium?

Various Practice of writing Quotations

☐ In terms of discounts and premiums

- Brokers may quote currencies in terms of discounts and premiums on them in the forward market.
- Eg: if USD/INR (S) = Rs. 36.3500 and broker says: dollar is at 3% premium in the three months forward market. The outright forward rate can be found by using the formula
- If the broker said that dollar is at 3% annualised premium then the premium would be 3% * (3/12)

Various Practice of Writing Quotations

- □ In terms of basis points or swap rates or forward margins
- ◦ Forward rate may be the same as spot rate, but generally the currency becomes costlier or cheaper.
- ◦ The difference is called swap points or forward margin
- ◦ A basis point is 1/100th of 1 percentage
- ◦ Suppose a broker at New York quotes for French Francs: FF/USD (S) = $0.2144/FF, 30 days forward discount 100 basis points and 60 days forward discount 20 basis points and for German Mark, DM/USD (S) = $ 0.4860/DM, 30 days forward premium120 basis points and 60 days forward premium 160 basis points ◦ For direct rates, premium has to be added to the spot rate and discount has to be subtracted from the spot rate ◦ For indirect quotes, reverse is true

Spot exchange rate	30 days swap rate/forward margins	60 days swap rate/forward margins	30 days forward rate	60 days forward rate
$0.2144/FF	−100	−20	$0.2044/FF	$0.2124/FF
$0.4860/DM	120	160	$ 0.4980/DM	$ 0.5020/DM

Various Practice of Writing Quotations

⬚ In terms of a-b or a/b where a and b are numbers ∘ When forward bid/ask quotes are given in this format;

∘ USD/INR (S) = Rs. 47.8525/9775, one month; 50/150 and 2 months; 200/300 or

∘ USD/INR (S) = Rs. 47.8525, one month; 50-150 and 2 months; 200-300 or

∘ If first figure is smaller than second figure then, base currency is at a premium and basis points have to be added to spot rate

∘ If first figure is greater than second figure then, base currency is at a discount and basis points have to be deducted from spot rate

∘ Therefore you can see the forward points and tell if base currency is at discount or premium

Spot exchange rate	1 month swap rate/forward margins	2 month swap rate/forward margins	1 month forward rate	2 month forward rate
47.8525/9775	50/150	200/300	47.8575/9925	47.8725/48.0075
Base currency is at a premium in both, so we add.				

Calculating Broken Period Forward Quotes

☐ Forex dealers normally quote forward rates at regular intervals like one month or three months.

☐ For example, dealers normally quote 1-week, 2-week, 1,2,3 6 months forward rate.

☐ However, depending on customer's requirement, these dealers quote forward rate on a specific future date that is not an exact multiple of months. Such kinds of forwards quotes are known as broken period quotes.

☐ Broken period rates are calculated by method of interpolation.

☐ Eg: Suppose a corporate customer wants to buy 100,000 USD on October 21st and the following info is given:

USD/INR	Maturity Date	Bid Rate	Ask Rate
Spot	July 14th	47.0725	47.0745
1 Month	Aug 14th	135	130
2 Month	Sept 14th	140	133
3 Month	Oct 14th	160	145
4 Month	Nov 14th	175	155

The interpolation method is used as follows:

☐ The forward rate points applicable are (160 to 175) for bid and (145-155) for ask.

☐ For 31 days (October 14th to November 14th), the bid spread is 15 points (175 to 160).

☐ For 7 days, the spread in bid point =15/31 *7 = 3.89

☐ So the spread applicable for October 21st is 160 + 3.89 = 163.89

☐ Similarly, for 31 days (October 14th to November 14th), the ask spread is 10 points (155 to 145).

☐ For 7 days, the spread in bid point = 10/31 * 7 = 2.26

☐ So the spread applicable for October 21st is 145 + 2.26 = 147.26

☐ For October 21st the bid/ask spread is 163.89/147.26; meaning that the base currency; USD is at a discount, so we deduct.

☐ Bid rate on Oct 21st will be = 47.0725 - 0.016389 = 47.0561

☐ And the Ask rate will be = 47.0745-0.014726 = 47.0597

Speculation in Currency Markets

☐ Speculation exists whenever someone buys a foreign currency, not because they need to pay for an import or is investing in a foreign business, but because they hope to sell the currency at a higher rate in the future

☐ Speculators buy and sell currencies to profit from fluctuations in the value of those currencies

☐ Some level of speculation is good; as it increases liquidity and provides easier access to foreign currencies

☐ However, excessive speculation can disrupt international trade and economic development

☐ Speculation is done both in spot markets as well as forward markets

Arbitrage in Currency Markets

☐ Arbitrage occurs when a currency trader takes advantage of different spreads offered by brokers for a particular currency pair by making trades.

☐ Different spreads for a currency pair imply disparities between the bid and ask prices.

☐ Currency arbitrage involves buying and selling currency pairs from different brokers to take advantage of this disparity.

☐ Currency arbitrage involves the exploitation of the differences in quotes rather than movements in the exchange rates of the currencies in the currency pair.

☐ Forex traders typically practice two-currency arbitrage, in which the differences between the spreads of two currencies are exploited.

☐ Traders can also practice three-currency arbitrage, also known as triangular arbitrage, which is a more complex strategy.

☐ Due to the use of computers and high-speed trading systems, large traders often catch differences in currency pair quotes and close the gap quickly

Forex Future Contracts

- Refers to a exchange traded contract to exchange one currency for another at a specified date in the future at a price (exchange rate) that is fixed on the purchase date
- A exchange traded forward contract is known as futures contract. Forward contracts are tailor made depending on the requirement of the contract buyers or sellers.
- However being exchange traded, futures contracts are standardized – contract size, maturity period etc.
- Being exchange traded, futures contract can be squared off (settled) easily which may not be possible in case of forward contract.
- In case of futures contract, the clearing house associated with exchange takes the counterparty risk – risk that the loss making party does not deliver during the maturity period.
- Traders also have to pay margins – initial and daily margin as exchanges require all traders to pay margin

Currency Option

☐ In finance, a foreign-exchange option (commonly shortened to just FX option or currency option) is a derivative financial instrument that gives the owner the right but not the obligation to exchange money denominated in one currency into another currency at a pre-agreed exchange rate on a specified date

☐ An option that gives the right to buy is known as a 'call' while one that gives the right to sell is known as a 'put'

☐ Depending on the contract term, an option may be exercisable on any date during a specified period or it may be exercisable only on the final or expiration date of period covered by the option contract

Factors Influencing FX Markets

Factors affecting FX Movements

☐ Economic policies by central banks affect FX movements.

☐ The ability of a country to attract capital investments will also impact the movement of its currency.

A strong economy
And/or
Tight monetary policy

Attracts capital from overseas,
More Reserves
Current account financing is easy
The home currency appreciates

A weak economy
And/or
Expansionary monetary policy

Capital flows overseas,
Fewer Reserves
Current account financing is difficult
The home currency depreciates

Factors affecting FX Movements

Themes in FX Right Now:
- "FX Wars" and "Competitive Devaluation"
- China's Devaluation of Yuan
- Differentials in Inflation
- Differentials in Interest Rates
- Current-Account Deficits
  (BOT—CAD—TD)
- Public Debt
- Terms of Trade
- Political Stability and Economic Performance

Corporate Trading and Speculative Trading

Corporate Hedging

How Do Large Corporations Use FX? Example:
- A large, Canadian Multinational Food Company sells Cattle in the US
- The market for Cattle is US dollar based
- The Canadian Company receives US dollars for its cattle sales

Canadian Company → Cattle → US Customer

US Customer → US Dollars → Canadian Company

Corporate Hedging

The Problem:

- The Canadian company faces significant FX risk
- If the US$ depreciates significantly, the company's contracts for future cattle sales become worth significantly less in CAD$


Today that same contract for 1,000,000 US$ only worth about 1,000,000 CAD$

1,000,000 US$ contract set in March '09 worth 1,300,000 CAD$

Corporate Hedging

The Solution: Hedge

• The Canadian Company knows it will receive US dollars in the future from its US customer

• The Company can hedge by selling US dollars at a forward date in exchange for Canadian dollars

The Hedge:

US Dollars ← Bank ← Canadian Dollars → | Canadian Company ← US Dollars ← US Customer
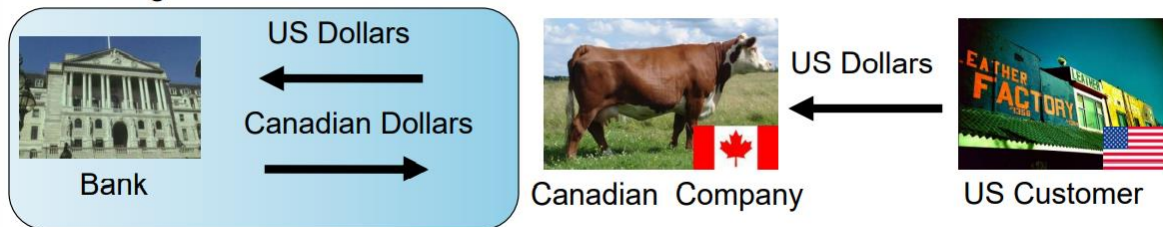
• Regardless of the appreciation/depreciation of the US dollar, the Canadian Company will receive a contracted amount of Canadian dollars

• The Canadian Company effectively receives Canadian dollars for its sales

Speculative Trading

Technical and Fundamental Trading

- Technical: Historical price movements predict future price movements
  - Support/Resistance, Fibonacci, Moving Average, Channels/Trends…

- Fundamental: Economic factors determine FX valuations
  - Interest Rate Parity, Purchasing Power Parity ("Big Mac Index")…

Speculative Trading - Fundamental

- Interest rate decisions

- "further QE by the Fed" = more Treasuries purchased, driving US interest rates lower, making US investments less attractive, USD bearish

- "further fiscal tightening" in Europe = higher Eurozone interest rates, making EUR investments more attractive, EUR bullish

- It all comes down to interest rates

Currency Risk

Transaction Risk

- Transaction risk arises whenever a company has a committed cash flow to be paid or received in a foreign currency.
- The risk often arises when a company sells its products or services on credit and it receives payment after a delay, such as 90 or 120 days.
- It is a risk for the company because in the period between the sale and the receipt of funds, the value of the foreign payment when it is exchanged for home currency terms could result in a loss for the company.
- The reduced home currency value would arise because the exchange rate has moved against the company during the period of credit granted.

	Spot Rate	AU Received From Sale	US Received After Exchange
Scenario A (Now)	US1 = AU2.00	2 million	1 million
Scenario B (After 90 days)	US1 = AU2.50	2 million	800,000

Transaction Risk Hedging

◻ Centralize cash management to net all offsetting transactions, transactions which are long and short the same currency.

◻ Time, lead and lag, offsetting business transactions in the same currency.

◻ Create offsetting business transactions in the same currency.

Currency Risk

Translation Risk

- A company that has operations overseas will need to translate the foreign currency values of each of these assets and liabilities into its home currency.
- It will then have to consolidate them with its home currency assets and liabilities before it can publish its consolidated financial accounts - its balance sheet and profit and loss account.
- The translation process can result in unfavorable equivalent home currency values of assets and liabilities.

	Pre-Consolidation	Year 1	Year 2
£1:$ Exchange Rate	n/a	1.50	3.00
Assets			
Foreign	$300	£200	£100
Home	£100	£100	£100
Total	n/a	**£300**	**£200**
Liabilities			
Foreign	0	0	0
Home (debt)	£200	£200	£200
Equity	£100	£100	0
Total	n/a	**£300**	**£200**
D/E ratio	n/a	2	--

Hedging Translation Risk

A company with foreign operations can protect against translation exposure by hedging.

The company can protect against the translation risk by purchasing foreign currency, by using currency swaps, by using currency futures, or by using a combination of these hedging techniques.

Any one of these techniques can be used to fix the value of the foreign subsidiary's assets and liabilities to protect against potential exchange rate fluctuations.

Currency Risks

Economic Risk
- Economic risk relates to uncommitted cash flows, or those from expected but not yet committed future product sales.
- These future sales, and hence future cash flows, might be reduced when they are exchanged for the home currency if a foreign competitor selling to the same customer as the company (but in the competitor's currency) sees its exchange rate move favorably (versus that of the customer) while the company's exchange rate versus that of the customer, moves unfavorably.
- Basically it is the effect of exchange rate changes on the long term expected income streams, i.e., expected net wealth of home country stockholders. This risk is usually managed with physical location of assets and liabilities.

Carry Trade

Rising interest rates come as bad news for those who wish to take a home loan or a car loan. However, rising interest rates bring several opportunities with them as well And one opportunity in this regard is that of 'Carry Trade', which essentially means borrowing in one market where interest rates are lower and investing in another market where interest rates are high and thereby making a gain.

But it is not that simple because it involves two different currencies. One currency is of the country where interest rates are low while the other currency is of the country where interest rates are high. And for 'Carry Trade' to be profitable, it is crucial that the exchange rates between the countries remain stable. Otherwise instead of a gain one could land up making a serious loss. Thus 'Carry Trade' is not devoid of risk

Lets assume that the interest rate in US is 2% whereas is in India it is 7% And let's say someone borrows $100 in USA to invest in India at 7%. It is evident that the differential of 5% (7% - 2%) is the opportunity to make a profit for taking an exchange rate risk

Let's assume the exchange rate is Rs 50 = $1. Now if someone in the US wants to invest in India, he has to invest Indian Rupees for which he has to purchase Indian Rupees. So if the amount in question is $100, then as per assumed exchange rate of Rs 50, it would amount to Rs 5000.

So when Rs 5000 is invested for one year in India at 7%, it would earn an interest of Rs 7% x 5000 = Rs 350. Thus at the end of the period the total amount would be Rs 5350. On conversion assuming no change in exchange rate, it would be $ 5350/50 = $107 or a net earning of $7. Now had the investment been made in the USA itself at 2%, it would have earned net $2 only. Hence by participating in carry trade an additional $5 profit opportunity emerged because of differential interest rates between two countries.

But here we have made a huge assumption that the exchange rate remained stable across the investment time period. This however may not be the case most of the time & in the event of exchange rate variation, the consequence can be painful for the investor.

At 7% we saw that the investor in our example made Rs 350 and the final amount that he received was 5350. At the exchange rate of Rs 50 = $1 he received $ 107. However it the rupee grew weaker in the interim period to Rs 60 = $ 1, he would now receive only $ 5350/60 = $ 89.16. Thus he would actually make a loss of nearly $11 instead of a gain of $2 he would have made had he invested in USA itself

This is the currency risk that one has to take in carry trade. If the currency of investment becomes weaker the consequences for the investor are painful and if the currency on the other hand were to get stronger his gains to would get stronger.

Conversely, if the exchange rate had become Rs. 40 = $1, he would actually have made USD 5350*/40$ =$133.75 which would have given him significant gain of $33.75 vs. $2 if he had invested in USA itself

Since 'Carry Trade' involves borrowing in one market to fund investments in another market, both 'gains' and 'losses' can get magnified due to the Currency Fluctuations.

However, in real life, the moment the traders get a feel that exchange rates are changing unfavorably, they rapidly unwind their positions by withdrawing their investments, and converting them into dollars. This is famously known as 'Carry Trade Unwinding'

While we have explained 'Carry Trade' in fixed income investment in our example, one must understand that 'Carry Trade' also refers to investments in any other asset class like shares, commodity, real estate, etc in one country by taking leverage from another country

Calculating Forwarded Points

$$\text{Forward Points} = \frac{S \times (R_c - R_b) \times n/360}{1 + R_b \times n/360}$$

S = spot rate

R_c = annualized interest rate of counter-currency

R_b = annualized interest rate of base currency

n = number of days from spot date to the forward date

Interest Rate Parity

$$F = S \left[\frac{1 + R_c\left(\frac{n}{360}\right)}{1 + R_b\left(\frac{n}{360}\right)} \right]$$

F = forward rate

S = spot rate

Rc = annualized interest rate of counter-currency

Rb = annualized interest rate of base currency

n = number of days

Thank You