Department of Commerce

University of Calcutta

Study Material

Cum

Lecture Notes

Only for the Students of M.Com. (Semester IV)-2020

University of Calcutta

(Internal Circulation)

Dear Students,

Hope you, your parents and other family members are safe and secured. We are going through a world-wide crisis that seriously affects not only the normal life and economy but also the teaching-learning process of our University and our department is not an exception.

As the lock-down is continuing and it is not possible to reach you face to face class room teaching. Keeping in mind the present situation, our esteemed teachers are trying their level best to reach you through providing study material cum lecture notes of different subjects. This material is not an exhaustive one though it is an indicative so that you can understand different topics of different subjects. We believe that it is not the alternative of direct teaching learning.

It is a gentle request you to circulate this material only to your friends those who are studying in Semester IV (2020).

Stay safe and stay home.

Best wishes.

Paper DSE 406A :

International Finance

International Finance: Module -1:

(Dr. Sajal Das)

Unit 1 : Forex Transactions

Determination of Cross Exchange Rates

At the retail forex market, home currency can be easily exchanged directly against some major currencies of the world but in some cases an user might require to know the exchange rate prevailing for other not so popular currencies which are not quoted directly against the home currency and is quoted against the most frequently traded currencies.

To illustrate, an Indian can easily find out from the currency dealers' the exchange rate prevailing for USD, GBP, EUR, JPY, AED, SGD, THB, AUD and accordingly an individual can exchange the home currency to obtain any of the quoted currencies but to know the exchange rate for ARS (Argentine peso) or PHP (Philippines Peso) or ZAR (South African Rand) against INR (Indian rupee) from a local currency dealer is not possible. The reason is at the retail level, dealers deal with only such currencies which are frequently exchanged.

So, to obtain the relevant exchange rate prevailing between INR and ZAR we can work out indirectly the value of the exchange rate based on the following 3 steps:

Step 1: Find the spot exchange rate between INR and USD (if exchange rate quote is given directly)

Step 2: Find the spot exchange rate between ZAR and USD (if exchange rate quote is given directly)

Step 3: Work out the exchange rate between ZAR and INR (known as cross-rate) based on the above 2 given spot- exchange rates.

One must clearly understand that out of the above 2 exchange rates involving 3 currencies, one of the currencies is a common currency for the given 2 exchange rate i.e. in this case it is USD.

Let us again clarify the steps to determine the cross-rate between INR and ZAR with a different common currency now, say, EUR.

Step 1: Find the spot exchange rate between INR and EUR (if exchange rate quote is given directly)

Step 2: Find the spot exchange rate between ZAR and EUR (if exchange rate quote is given directly)

Step 3: Work out the exchange rate between ZAR and INR (known as cross-rate) based on the above 2 given spot- exchange rates.

Both the approaches using USD or EUR (as the common currency) which are the most frequently traded currencies will lead to the same answer of the value of the exchange rate (cross-rate) between ZAR and INR.

The following numerical illustration will clarify the above discussion:

1.1 Determine the cross-rate between INR and ZAR based on the following information:

INR/USD: 75.37 (one -way spot exchange rate between INR and USD as on 31.03.2020)
ZAR/USD: 17.73 (one-way spot exchange rate between ZAR and USD as on 31.03.2020)

Solution: (Here the common currency is USD)
Step 1: 1 USD = 75.37 INR
Step 2: 1 USD = 17.73 ZAR } ⟶ 17.73 ZAR = 75.37 INR
Step 3: Cross rate between INR and ZAR:
1 ZAR = (75.37/17.73) INR = 4.25 INR (Answer in Direct Quote)
Or, 1 INR = (17.73/75.37) ZAR = 0.2352 ZAR (Answer in Indirect Quote)
Both the answers are correct, it depends on whether the cross-rate will be directly quoted or indirectly quoted.

1.2 Determine the cross-rate between INR and ZAR based on the following information:
INR/EUR: 82.95 (one -way spot exchange rate between INR and EUR as on 31.03.2020)
ZAR/EUR: 19.51 (one-way spot exchange rate between ZAR and EUR as on 31.03.2020)

Solution: (Here the common currency is EUR)
Step 1: 1 EUR = 82.95 INR
Step 2: 1 EUR = 19.51 ZAR } ⟶ 19.51 ZAR = 82.95 INR
Step 3: Cross rate between INR and ZAR:
1 ZAR = (82.95/19.51) INR = 4.25 INR (Answer in Direct Quote)
Or, 1 INR = (19.51/82.95) ZAR = 0.2352 ZAR (Answer in Indirect Quote)

As we can see from both the Illustration 1.1 and 1.2 that the value of the cross -exchange rate between INR and ZAR is same at a given point of time whether we use USD or EUR as the common currency.
Now, let us again learn the steps to determine cross-rate using 2-way exchange rate quotes i.e. when both bid and ask rate are given.

1.3 Determine the cross-rate between INR and ZAR based on the following information:
INR/USD: 74.85 – 75.37 (two -way spot exchange rate between INR and USD)
ZAR/USD: 17.25 – 17.73 (two-way spot exchange rate between ZAR and USD)

Solution: (Here the common currency is USD)
Step 1: 1 USD = 74.85 – 75.37 INR
Step 2: 1 USD = 17.25 – 17.73 ZAR
↑ Bid ↑ Ask

Step 3: Cross rate between INR and ZAR will be determined in 2 parts as because we need to compute the bid rate first and then the ask rate
$(INR/ZAR)_{Bid} = (INR/USD)_{bid} \times (USD/ZAR)_{bid}$
↑ ↑

given not given directly

= $(INR/USD)_{bid}$ x {1 / $(ZAR/USD)_{ask}$ } *

= (74.85) x { 1 / (17.73) }

= 4.22 (bid rate)

$(INR/ZAR)_{Ask}$ = $(INR/USD)_{ask}$ x $(USD/ZAR)_{ask}$

given not given directly

= $(INR/USD)_{ask}$ x {1 / $(ZAR/USD)_{bid}$ } *

= (75.37) x { 1 / (17.25) }

= 4.37 (ask rate)

The cross-rate between INR and ZAR (for 2 way quote) is INR/ZAR: 4.22 – 4.37 i.e. 1 ZAR= 4.22 – 4.37 INR.

NB. * whenever taking the reciprocal of the exchange rate, bid rate will become ask rate and ask rate will be taken as bid rate.

Similarly, you can work out the cross rate in terms of 1 INR in the form of ZAR/INR.

Practice Numerical:

1. A foreign currency dealer quotes the following exchange rates:
   (i) INR/AED: 17.823/45
   (ii) INR/THB: 1.16/35
   (iii) INR/CAD: 34.42/78
   You as a customer is interested to purchase 10,000 units of THB and then would like to convert THB so obtained into AED. Determine the amount of AED.

2. Determine the exchange rate between GBP and CAD using the following given rates:
   (i) USD/GBP: 1.63 – 1.74
   (ii) CAD/USD: 1.123 – 1.245

3. Find the cross-rates between Pound Sterling and Arab Emirate Dinar based on the following exchange rate quotations:
   (i) CAD/GBP: 1.823/36
   (ii) AED/CAD: 0.8334/48

Unit 2: Currency Arbitrage

Currency Arbitrage is the process or mechanism through which one can earn a riskless profit without any capital commitment or capital investment by exploiting any opportunity that exists in the forex market due to any price discrepancies prevailing in the exchange rate in different markets of the world at any given point of time. An arbitrageur is a person who undertake the process of currency arbitrage. Such opportunities exist for very limited time, might be for few seconds on real time basis, before being wiped out by the arbitrageurs resulting in an equilibrium of the forex market.

In this unit we will be focusing on the Spot Market currency arbitrage involving two and three different currencies. 2-point arbitrage involves only two currencies and is known as Spatial arbitrage whereas 3-point arbitrage involves three currencies and is also known as Triangular arbitrage or Geographical arbitrage.

Now, let us clarify the arbitrage concept in a very lucid manner. Basically, it is a human tendency to buy goods at a cheaper price and sell at a dearer price. The same principle applies in case of currency arbitrage. So, the necessary condition here is that any product must be available in both the markets and one can easily buy from one market and sell in the other market without any restrictions, assuming that prices are different in both the markets. Quite naturally, such price discrepancies will not sustain forever, and after some time, both the markets will command same price. For currency exchange rates in the forex market, an arbitrageur looks for any such opportunity to exploit favourably in order to earn risk-less profit. (underlying assumptions exist)

We will illustrate stepwise how an arbitrageur can take advantage of the exchange rate - price discrepancies to make money in the forex market with the help of the following example.

2.1 The following quotes are available in two different forex markets (dealer's quote):

(i) 1 EUR: 4.432/49 AED

(ii) 1 AED: 0.232/59 EUR.

Both the exchange rates given involves 2- currencies Euro and Dirham, the first one is quoted in terms of one-unit denomination of Euro and the other one is quoted in terms of one unit of Dirham. To proceed further, it is necessary to convert either of the exchange rate in similar terms.

Step 1: Let us convert the second exchange rate in terms of 1 EUR.

Given 1 AED = 0.232 – 0.259 EUR

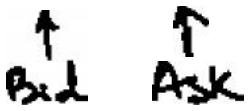
$\therefore$ 1 EUR = (1/0.259) – (1/0.232) AED

1 EUR = 3.861 – 4.31 AED

Step 2: Now both the exchange rates are easily comparable to find out in which market the exchange rate is cheaper and where one can sell at a higher price, if price discrepancies exist at all.

Given rate: 1 EUR= 4.432 –4.449 AED

Derived rate: 1 EUR= 3.361 – 4.31 AED



Step 3: An arbitrageur will look for price discrepancies, which in this case we can clearly see that discrepancies does exist. One can buy 1 EUR from the dealer @ 4.31 AED and can sell the same EUR to another market (dealer) @ 4.432 AED. (assumptions exist)

Step 4: An arbitrageur can buy any amount of EUR (say 100 or 1000 or 100,000) and can sell them immediately, on real-time basis to pocket the difference as a riskless profit, without any capital investment. This need to be done swiftly as such opportunities exist for only few seconds in the actual market.

Step 5: Arbitrage Gain per 1 EUR = 4.432 – 4.31 AED = 0.122 AED (Ans)

The above illustration involves only 2 currencies and is known as 2-point or Spatial arbitrage. We will now take up 3-currencies to illustrate how triangular arbitrage works.

2.2 From the following exchange rates prevailing at a given point of time, determine whether currency arbitrage is possible.

(i) 1 TRY= 22.18 – 22.2 BDT
(ii) 1 TRY= 29.69 – 29.72 PKR
(iii) 1 PKR= 0.75 – 0.78 BDT

Let us first identify the three currencies involved in the above exchange rate quotes, viz. TRY is the symbol for Turkish Lira, BDT is Bangladesh Taka and PKR is Pakistani Rupees. While solving triangular arbitrage, one must always remember that whichever currency one start with must be ending with the same currency. Say if in the above example if we start with TRY, then final answer at the end after all the conversion will be in terms of TRY.

Step 1: Assuming home currency to be BDT, one will be in possession of BDT which will be used to BUY TRY. (i.e. Sell BDT to BUY TRY)

So, relevant exchange rate is 1 TRY = 22.2 BDT, accordingly we can assume an arbitrageur can initially use 222 BDT to obtain 10 TRY or 2220 BDT to buy 100 TRY or any other amount.

(the amount of initial investment whether 222 BDT or 2220 BDT is arbitrageurs' own decision)

Step 2: Now SELL TRY to BUY PKR.

Relevant exchange rate for the purpose of conversion: 1 TRY = 29.69 PKR; if we proceed with the initial investment of 222 BDT then we must be having 10 TRY.

So, PKR obtained = 10 TRY @ 29.69 = 296.9 PKR

Step 3: Now SELL PKR to BUY BDT (initial currency)

Relevant exchange rate for the conversion: 1 PKR = 0.75 BDT

Now, BDT obtained = 296.9 x 0.75 = 222.675 BDT.

Step 4: Arbitrage Gain= (222.675 -222.0) BDT = 0.675 BDT

Practice Numerical:

1. Determine whether arbitrage gain is possible in the following case:
   (i) 1 BRL= 0.1235/48 BHD
   (ii) 1 BHD= 8.0435/682 BRL
   (iii) 1 BRL= 0.1242/67 BHD

2. Based on the following exchange rate quotations, identify whether triangular arbitrage gain will work out in favour of the arbitrageur.
   (i) 1 EUR= 82.4261/88 INR
   (ii) 1 AUD= 33.567/93 INR
   (iii) 1 AUD= 0.4239/775 EUR

3. From the given exchange rate prevailing in the spot market determine whether an arbitrageur can earn riskless profit from it.
   (i) 1 TRY= 161.75 – 161.96 CLP
   (ii) 1 CLP= 0.0943 – 0.0955 RUB
   (iii) 1 RUB= 0.0682 – 0.06295 TRY

International Finance

Module 1

Currency Options – The Essentials

(Dr. Soumya Saha)

Definitions and Terminology

A foreign exchange spot or forward transaction creates a symmetrical exposure, so that one party contracts to deliver to another a specified amount of one currency on a specified value date and receive a specified amount of another currency in exchange. A currency option trade, however, is an asymmetrical transaction, in that the buyer of the option has the right, and the option writer (seller) the obligation, to make or take delivery of a specified amount of currency in exchange for another on (or up to) a particular date.

An option is a contract between the buyer (or holder) of the option and the seller (or writer) of the option. This contract describes the rights of the option holder and the obligations of the option writer.

An example of an option is a call option, which represents the right of its holder to buy a specified asset at a specified price on or before a specified date. The call option also represents the obligation of its writer to sell, if called upon, a specified asset at a specified price on or before a specified date. Thus, with options, unlike futures, the buyer has the right, not the obligation, to transact with the seller.

The specified asset involved in the option contract is referred to as the underlying asset on which the option is written. The specified price at which the asset may be bought is called the exercise price, strike price, or contract price. Purchasing the asset through the option contract is referred to as exercising the option and the specified date on or before which the option may be exercised is called the expiration date or the maturity date.

Therefore, a foreign exchange option is a contract, which gives the buyer/holder the right but not the obligation to enter into a specific foreign exchange contract at a future date. The buyer, therefore, knows the worst foreign exchange rate that they will face but retains the flexibility to do better than the option strike rate. The writer/seller of a foreign exchange option receives a fee for guaranteeing an exchange rate at which they will deal. This fee is the premium.

The exchange rate on the underlying contract is referred to as the strike rate or exercise rate. European options enable the buyer to exercise the option at any time during the life of the option but settlement always takes place on the settlement date. For an American option,

exercise may take place at any time during the life of the option but settlement may take place two days after the option is exercised.

A foreign exchange option will simultaneously be a call option on one currency (the right to buy that currency) and a put option on another currency (the right to sell that currency).

There is an active option market between the major currencies and their crosses of the world and other minor currencies may be possible provided there is a liquid forward foreign exchange market for the period required with no restrictions. Options periods are typically from one day up to five years. Currently, options beyond one year are generally only available for the more liquid currency pairs. Most foreign exchange options have an underlying principle in the range from 3 million dollars to 100 million dollars. However, today with many "smaller" participants being involved in the market, it is quite possible to obtain options for much smaller amounts.

CALL OPTION

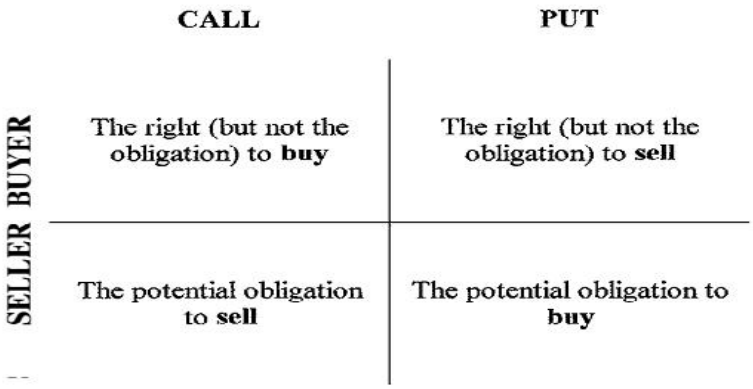
Essentially, the buyer of a currency call option has the right to buy (take delivery of) a predetermined amount of one currency in exchange for a predetermined amount of another currency up to a predetermined date and at a predetermined exchange rate. The writer/seller of a currency call option has the obligation to sell (deliver) a predetermined amount of one currency in exchange for a predetermined amount of another currency up to a predetermined date and at a predetermined exchange rate.

A holder of a call option has the right but not the obligation to buy an asset.

For example, take a call option of Swiss francs against the dollar, expiring in three months' time, for 10 million francs, struck at an exchange rate of 1.6700 francs per dollar ($/sfr 1.6700). The specified exchange rate in an option contract is known as theexercise or strike price. The buyer of the call option has the right to receive 10 million francs from the call option writer and deliver to that writer 5 988 023.95 dollars (10 000 000 francs divided by 1.67 francs per dollar). The writer of this call option, therefore, has the obligation to deliver 10 000 000 francs to the call option buyer in exchange for 5 988 023.95 dollars, at any time up to and including the three-month expiry date.

PUT OPTION

The buyer of a currency put option has the right to sell (deliver) a predetermined amount of one currency in exchange for a predetermined amount of another currency up to a predetermined date and at a predetermined exchange rate. The writer of a currency put option has the obligation to buy (take delivery of) a predetermined amount of one currency in exchange for a predetermined amount of another currency in exchange for a predetermined amount of another currency up to a predetermined date and at a predetermined exchange rate.



A holder of a put option has the right but not the obligation to sell an asset.

For example, consider a put option on Swiss francs against the dollar, expiring in three months' time, for 6 million Swiss francs struck at an exchange rate of 1.5000 francs per dollar ($/sfr 1.500). The buyer of the put option has the right to deliver 6 million Swiss francs to the put option writer in exchange for 4 million dollars (6 000 000 francs divided by 1.50 francs per dollar) from the option writer. This right expires in three months' time. The writer of this put option, thus, has the obligation to receive 6 million francs from the option holder in exchange for 4 million dollars, at any time, up to and including the three-month expiry date.

PARTIES AND THE RISKS INVOLVED

	Financial risk	**Profit potential**	**Credit risk**
Option buyer	Limited to premium paid	Unlimited	Credit worthiness of option seller
Option writer (seller)	Unlimited	Limited to premium earned	Settlement risk if option is exercised

The option buyer has the right to demand fulfilment of the option contract and the owner can exercise the option. The option buyer pays a premium for that right. The option seller (writer) grants the right and receives a premium for accepting the obligation to fulfil the option contract, if the buyer demands.

CURRENCY OPTION RISK/REWARD PERCEPTION

	Buy option Limited risk??	**Sell option** Unlimited risk??
Hedger	**Insurance** Hedging a position against a possible risk – "I am happy not to exercise the option"	**Profit taking** Making the most of an existing position – "I don't mind being exercised"
Speculator	**Lottery** Betting on a strong directional market movement – "I must exercise or lose all my money"	**Wizardry** Making money out of thin air – based on a market view – "I must absolutely not be exercised"

CURRENCY OR DOLLAR CALL OR PUT OPTION?

Because a foreign exchange transaction is, by definition, an exchange of one currency for another, the purchase of one currency is also the sale of another currency. Therefore, the right to buy one currency is also the right to sell another currency. For example, the owner of a Swiss franc call option has the right to buy Swiss francs and also has the right to sell dollars. The writer of a Japanese yen put option is also the writer of a dollar call option. Hence, the terms call and put option in foreign exchange are interchangeable.

This can be a source of some confusion in the market. For example, for a call option struck at a dollar/Japanese rate of 130.00, is it the right to buy dollars or the right to buy Japanese yen? Indeed, there is no definitive answer and much depends on the viewpoint of the user and whether the dollar is seen as the base currency or the foreign currency is viewed as the base currency. For the sake of clarity, it is common practice to use both terms, calls and puts. For example, a trader may well ask for a price for a Swiss franc call/dollar put at a strike of 1.6700 in order to avoid this confusion.

STRIKE PRICE AND STRIKE SELECTION

The preset price is called the strike price or the exercise price, which is the predetermined rate of exchange at which exercise takes place. The strike is usually chosen at a level close to the current foreign exchange spot of forward rate but may be at any reasonable level. The premium (price) of an option is very sensitive to the relationship of the strike to the current spot foreign exchange rate. However, in general, both buyers and sellers of options will select a strike based on several factors, including their forecast or expectations of the value of the underlying currency during the lifetime of the option and the option's payoff (profit/loss) profile.

The strike price is the exchange rate at which the option may be exercised.

For example, a market participant with a bullish view for the dollar against the Swiss franc may choose to purchase the dollar in the forward foreign exchange market because there is a belief that the value of the dollar will appreciate against the Swiss franc. A long position in the underlying (dollar) represents the most bullish view of the underlying. However, a long dollar forward foreign exchange position has a payoff profile of unlimited gains if the dollar increases in value and unlimited losses if the dollar decreases in value. If the market participant wishes to eliminate the potential loss while keeping the potential gains, this participant may purchase a dollar call/Swiss franc put instead of purchasing the dollars in the forward foreign exchange market. Thus, a long dollar call represents a bullish view of the dollar but with protection. The cost of the protection is the upfront premium, thus there is a trade-off between the premium payment and the payoff profile.

The market participant now needs to select a strike rate. Should it be in-, at- or out-of-the money? In order to make this decision, the market participant will need to consider the upfront premium payment, the breakeven point (the point where the gains begin), and the leverage of the given risk. If the market participant has limited funds to spend on the premium, then an out-of-the-money strike, which is relatively inexpensive, reflecting less protection and higher leverage will be chosen. Thus, the purchaser is willing to accept less protection because of a strong view that the dollar value will increase. The breakeven point will not be as favourable as between the forward rate and the strike. This may, perhaps, be better understood by considering the following table: a strike that is further in-the-money because it will represent the premium and the difference

	Foreign exchange forward	**In-the-money**	**At-the-money**	**Out-of-the-money**
Upfront premium	None	High	Medium	Low
Protection	None	High	Medium	Low
Breakeven rank	1st	2nd	3rd	4th
Participation in underlying (delta)	100%	High	50%	Low
Leverage	None	Low	Medium	High

EXERCISING OPTIONS

When an option is exercised, the physical exchange of the two currencies is effected. In our example above, the holder of the Japanese yen put option will deliver the yen to the writer and receive dollars, at the predetermined exchange rate. Likewise, the holder of a Swiss franc call option will deliver dollars to the writer and will expect to receive Swiss francs, again at

the specified exchange rate. The actual exercise procedure varies according to whether the contract is traded in an organised options exchange or in the over-the-counter market.

The exchanges have specific delivery mechanisms, which may vary considerably according to the type of client or to the operational procedures of the exchange broker concerned. However, in the over-the-counter market, exercise occurs in exactly the same manner as if a spot trade had taken place. This flexibility means that exercise happens every business day at either 3pm London time or 3pm Tokyo time. New York has traditionally used 10am New York time, which does coincide with 3pm London, except for when there is a time discrepancy once or twice a year, when both centres change their clocks on different days.

For example, consider a Swiss franc call option for 17 million francs against the dollar at a strike price of 1.7000 francs per dollar ($/sfr 1.7000). Once the holder of the option exercises the option, the holder will receive 17 francs and pay 10 million dollars (17 francs divided by 1.7000 francs per dollar) for spot value, which is in two working days.

It is normal practice in the over-the-counter market to avoid any confusion regarding exercise days and settlement days by quoting both expiry and value date simultaneously. Thus, “to buy a Swiss franc 1.70 call/dollar put on 17 million francs will expire on 12 February, with value on 14 February”.

AMERICAN AND EUROPEAN STYLE OPTIONS

Options can be priced as an European style option or as an American style option. The holder of a “European-style” option has the right to exercise the option only on the expiration date, while the writer of this option may be assigned only on the expiration date of the option. On the other hand, the holder of an “American style” option has the right to exercise the option on any day until expiry, while the writer of an American style option may be assigned on any day until expiry.

European style option – an option where the purchaser has the right to exercise only at expiration.

American style option – an option a purchaser may exercise for early value at any time over the life of the option up to and including its expiration date.

For example, if an option expires on 28th March, with an American style option, the holder could exercise the option on 5th March and expect delivery of the currencies involved to take effect two business days later. With a European style option, exercise can only occur on 28th March, with delivery then two business days later. It must be remembered that there is a difference in price between the two styles of option, but only sometimes. The difference in price occurs because there is a difference in the interest rates each currency attracts. With

An American option, the intrinsic value is priced against the spot or the forward outright price, whichever is the most advantageous. This is because the American option can be exercised for spot value at any time during the life of the option.

If the call currency (right to buy) of the option has a higher interest rate than the put currency (right to sell), there will be an advantage in calculating the intrinsic value against spot rather than against the forward outright rate. Therefore, the risk that the writer of the American option has is that at some point in time, if the option is so far in-the-money that there is negligible time value remaining, the holder may exercise early. This would mean the writer would incur the differential interest cost of borrowing the higher interest rate currency and lending the lower interest rate currency. If this happens, the option is said to be at logical exercise.

As the American style option is more flexible, shouldn't it be more expensive all the time?

Actually, the American option is not really more flexible than the European option. True, it can be exercised early and therefore the intrinsic value can be realised immediately but unless the option is at logical exercise, the holder would be better to sell the option back and receive the premium. Remember, the premium represents the intrinsic value of an option plus time value. This is true for both American and European options and in both cases, if the option is not at logical exercise, and the aim is to realise maximum profit, it would be better to sell than to exercise the option.

Examples of cases when it would be better to pay the extra premium and buy a more expensive American style option are:

- ✓ In buying an option where the call currency has the higher interest rate and it is expected that the interest rate differential will widen significantly;
- ✓ In buying an option where the interest rates are close to each other and it is expected thatthe call interest rate will move above the put interest rate;
- ✓ In buying an out-of-the-money option with interest rates as in both above and it is expected that the option will move significantly into the money, then the American style option is more highly leveraged and will produce higher profits.

IN-, AT-, OR OUT-OF-THE-MONEY

An in-the-money option is an option that has intrinsic value, that is the extent to which it is in the money. For a call option, the strike is below the spot rate and for a put option, the strike is above the spot rate. For example, if the sterling spot rate against the dollar is at £/$ 1.8000, a $1.7500 call on sterling (right to buy sterling and sell dollars) is in-the-money, as is a $1.8500 put on sterling (right to sell sterling and buy dollars). The more an option is in-the-money, the higher the intrinsic value and the more expensive it becomes. As an option becomes more in-the-money, its delta increases and it behaves more like the underlying in profit and loss terms. Hence deep in-the-money options will have a delta of close to one.

An in-the-money option describes an option whose strike price is more advantageous than the current market price of the underlying.

Also, the option has time value, which is a mathematical function of implied volatility, time to maturity, interest rate differentials, spot and the strike of an option. It represents the additional value of an option due to the opportunity for the intrinsic value of the option to increase. However, it is difficult to quantify, as it is very subjective. It is a wasting asset, so time value declines as expiration approaches and at a more rapid rate.

An option is said to be out-of-the-money when it has no intrinsic value. For a call option the strike is above the spot rate and for a put option, the strike is below the spot rate. Again, as before, using a spot rate of £/$ 1.8000 per pound, a $1.8500 sterling call (right to buy sterling and sell dollars) and a $1.7500 sterling put (right to sell sterling and buy dollars) option are both out-of-the-money.

An out-of-the-money option describes an option whose underlying is above the strike price in the case of a call, or below it in the case of a put.

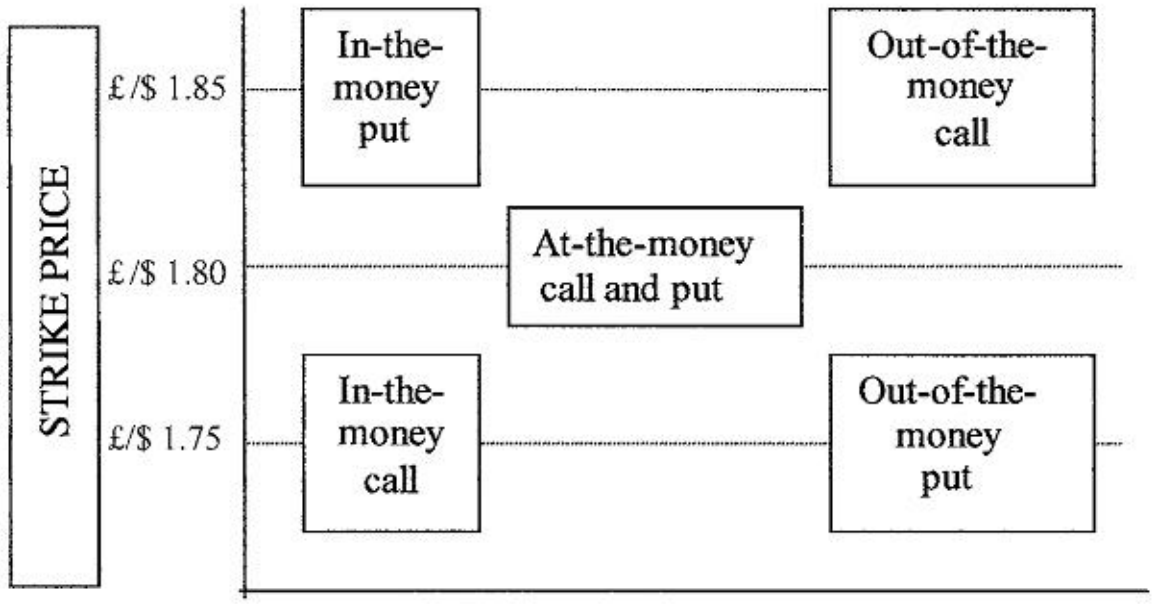
The more the option is out-of-the-money, the cheaper it is, since the chances of the option being exercised become slimmer. Also, its delta declines and the option becomes less sensitive to movements in the underlying.

An option that isat-the-moneyis one whose strike price is set at the same level as the prevailing market price of the spot or underlying forward contract. For example, with a pound against the dollar spot rate at £/$ 1.8000, a $1.8000 sterling call option is said to be at-the-money spot.

Thus, when considering whether an option is in-, at- or out-of-the-money, it should be remembered that it is the distance between the strike and the market forward foreign exchange price of the underlying when the option contract is negotiated or it is the distance between the strike and the market spot foreign exchange rate of the underlying at expiration because the market forward foreign exchange price is the expected future value of the market spot foreign exchange rate.

In summary, it should be noted that intrinsic value is simply the difference between the spot price and the strike price.

Option "moneyness" of a £/$ 1.8000 option



For call options this implies:

In-the-money =Spot price is above option strike (exercise) price

Out-of-the-money=Spot price is below option strike (exercise) price

At-the-money =Spot price and option strike (exercise) price are the same

And for put options this implies:

In-the-money =Spot price is below option strike (exercise) price

Out-of-the-money=Spot price is above option strike (exercise) price

At-the-money =Spot price and option strike (exercise) price are the same

Also, it should be noted that intrinsic value versus time value can be explained as:

	In-the-money	**Out-of-the-money**	**At-the-money**
Put/Call	Time value decreases as the option gets deeper in-the-money, while intrinsic value increases	Time value decreases as the option gets deeper out-of-the-money, while intrinsic value is zero	Time value is at a maximum when an option is at-the-money, while intrinsic value is zero

A cause of some confusion in the market, which is more semantic than real, occurs whenthe forward or futures price differs from the spot. For example, if sterling against the dollarspot is £/$ 1.8000 and the March forward/futures price is £/$ 1.7500, the $1.80 sterling call for March could be said to be at-the-money against the spot but out-of-the-money against the forward/futures price. Alternatively, the $1.75 sterling call for March is in-the-money against the spot rate but at-the-money against the forward/futures price. Thus, traders usually resolve these problems by using the terms “at-the-money spot” to refer to the $1.80 call and “at-the-money forward” to refer to the $1.75 call, in this particular example. Hence, with a Black–Scholes model, the delta of a European style at-the-money forward option will always be 0.5. However, because forwards commonly trade at a premium or discount to the spot, the delta may not be equal to 0.5.

THE PREMIUM

The premium is the price paid for the option. With a currency option, this can be expressed in different ways and is usually paid with spot value (two business days) from the initial deal date. This is, the premium is usually paid up front.

An option buyer pays a premium, the price of the option, for the opportunity to benefit from a favourable exchange rate movement. The potential loss is limited to the option premium, and there is unlimited profit potential. On the other hand, the option seller receives a premium as payment to assume the risk of an adverse exchange rate movement. The seller’s potential profit is limited to the option premium and there is unlimited risk of loss.

	Maximum profit	**Maximum loss**
Short call	Premium received	Unlimited*
Short put	Premium received	Unlimited**
Long call	Unlimited*	Premium paid
Long put	Unlimited**	Premium paid

* Since the order of magnitude of the profit/loss potential is so much greater than the premium, it is unnecessary to subtract the option premium from it. For a long call, the maximum profit would be reduced by the premium paid. For a short call, the maximum loss would be reduced by the premium.

** Since the price or value of the underlying asset cannot fall below zero, the maximum profit of a long put is actually the strike price minus the premium paid. Similarly, the maximum loss of a short put is actually the strike price minus the premium received.

The option buyer pays a premium to the seller for the right to benefit if the underlying moves in a favourable direction, but risks only the premium if the underlying moves in an unfavourable direction. Thus, from a profit/loss standpoint, a long call option can be described as being equivalent to a long position in the underlying with insurance against the value of the underlying decreasing. Also, again from a profit/loss standpoint, a long put option can be described as being equivalent to a short position in the underlying with insurance against the value of the underlying increasing.

One unfortunate source of confusion in the currency options market is in the method of quoting the option premium itself. This is not a problem encountered in other option markets as for equities or with gold options. For example, the premium is normally expressed in the same terms as used in the underlying instrument, like $5 per share or $3 per ounce. However, with currency options, as with the foreign exchange market itself, there are alternative ways of quoting the same premium.

For instance, currency futures in Chicago are expressed in the reciprocal form, dollars per currency, and the futures option market adopts the same pricing convention. Thus the holder of one contract of a February 77 call has the right to buy 125 000 Swiss francs (the underlying value of one futures contract) at an exercise price of $0.77 per Swiss franc. However, in conventional European terms, this would be expressed as a call on Swiss francs struck at $/sfr 1.2987 (1 divided by 0.77). If we assume the premium for this February 77 call is 2.33 ($0.0233) per Swiss franc, then the premium amount per Swiss franc option contract would be:

Sfr 125 000×$/sfr 0.0233=$2912.50

Were this same trade to have been executed in the over-the-counter market, the premium would more likely have been expressed as a percentage of the strike price, in this case 3.026% (2.33/77×100=3.026). The total premium amount (ignoring rounding) is the same as the above and is calculated by multiplying the underlying dollar amount by the percentage figure:

Sfr 125 000×$/sfr 0.77=$96 250

$96 250×0.3026=$2912.52

This would be the case if the option were purchased in either London or New York. But, if the option were purchased in Switzerland or Germany, also in the over-the-counter market, the premium would more likely be expressed in terms of Swiss francs per dollar rather than dollars per Swiss franc. This can be calculated by multiplying the percentage premium by the

Swiss franc spot rate, say $/sfr 1.2850:

0.03026×sfr/$1.2850=sfr 0.0389 per dollar

This would normally be expressed as 3.89 centimes per dollar. The total premium, in Swiss francs, is therefore:

$96 250×sfr/$0.0389=sfr 3 744.13

Components of the premium can be split into two parts, intrinsic value and time value.

Thus:

an option premium=intrinsic value+time value.

For example, if the forward outright rate of the dollar against Swiss francs is $/sfr 1.6000, then for a dollar call (right to buy), Swiss franc put (right to sell) option, with a strike of 1.5700, the intrinsic value of the option would be 0.0300 dollars against Swiss francs. For a dollars put (right to sell), Swiss franc call (right to buy) option, with a strike of 1.5700, then the intrinsic value of the option is 0.0000 dollars against Swiss francs.

Intrinsic value is the advantage to the holder of the option of the strike rate over the forward outright rate.

Time value is a mathematical function of implied volatility, time to maturity, interest rate differentials, spot and the strike of an option.

Time value represents the additional value of an option due to the opportunity for the intrinsic value of the option to increase.

Also, intrinsic value for an American style option can be defined as the amount the option would be worth if it were exercised immediately. In other words, it is the difference between the strike price and the spot rate. For example, with spot sterling against the dollar at £/$ 1.8000, the $1.7500 call option has $0.05 intrinsic value. Another way of putting it is to say that the £/$ 1.7500 call is in-the-money by 5 cents. Any option trading less than intrinsic value presents a riskless profit for an arbitrageur.

Thus, intrinsic value is simply the amount the option would be worth on expiry, whereby a currency call option has value on expiry by the amount the spot rate is higher than the strike rate and whereby a currency put option has value in expiry by the amount that the spot rate is below the strike rate. Obviously, an option will not be worth any more than intrinsic value on expiry because there will be no inherent advantage in owning it. Only if there is some time remaining before expiry will the option have any value in addition to its intrinsic worth.

BREAK-EVEN

The break-even point of an option position is used to quantify the profit/loss of an option buyer and the option seller. The calculation of the break-even rate is simple if the exchange rate and the option premium are expressed in similar terms.

For both the call option buyer and seller, the call break-even equals the strike plus premium, while for both the put option buyer and seller, the break-even is equal to the strike minus the premium.

The Currency Option Concept

	BUY the option **PAY PREMIUM**	**SELL** the option **RECEIVE PREMIUM**
Call option on the dollar and **Put** option on the yen:	**Obtain the RIGHT** to buy the dollars and to sell the yen **Risk** is to a positive move in volatility and a positive move in dollars	**Assume the OBLIGATION** to sell the dollars and to buy the yen **Risk** is to a negative move in volatility and a negative move in dollars
Put option on the dollar and **Call** option on the yen	**Obtain the RIGHT** to sell the dollars and to buy the yen **Risk** is to a positive move in volatility and a negative move in dollars	**Assume the OBLIGATION** to buy the dollars and to sell the yen **Risk** is to a negative move in volatility and a positive move in dollars
CONCEPTS	Protection till maturity is a **positive** factor. However, there is a cost now, which is a **negative** factor.	Reward now is a **positive** factor. However, there are risks till maturity, which is a **negative** factor.

The Currency Options Market

Foreign exchange options can be traded on formal exchanges or in the over-the-counter (OTC) market, i.e. between two parties. The exchanges, such as the Chicago Board Options Exchange, the London International Financial Futures Exchange or the Philadelphia Stock Exchange, provide standardised options or standardised contracts with fixed maturity dates, strike prices and contract sizes, although each exchange has its own contract specifications and trading rules. The OTC market differs from the listed market in a similar way to how the spot and forward foreign exchange market differs from currency futures markets. The OTC market offers a customised, or tailor-made product, where the underlying amount, expiry date, strike and even the option type (American or European) are a matter of negotiation. Thus, OTC option specifications are much more flexible to fit specific requirements. In the listed market, all such terms are standardised.

The OTC market is principally made up of banks and financial institutions, which make option prices to their clients, and to each other. The exchange traded market is a public market, where traders (who may be international banks) and private individuals own seats on the exchange, and meet together in a “room”, “floor” or “pit” to trade currency options; whereby in the OTC market, trading is a private deal between two parties. Similarly, in the OTC market, settlement of option trades and the credit risk inherent in any deal is a matter between the financial institution and its counterparty. This is usually for the option premium, which is paid upfront by the buyer to the writer. The buyer, therefore, has a contingent claim on the writer until the option expires. In the listed market, all transactions are processed through a clearing house which acts as the counterparty to each deal, through a margining process (similar to that used in all futures markets) and the clearing house guarantees the performance of the contract.

EXCHANGE vs OVER-THE-COUNTER

Exchange traded options can be characterised by:

- ✓ Currencies are quoted mainly against dollars although recently some crosses have become available;
- ✓ Strike prices are at fixed intervals and quoted in dollars or cents per unit(s) of currency;
- ✓ Fixed contract sizes;
- ✓ Fixed expiry dates, generally at three-month intervals, e.g. delivery on the third Wednesday of March, June, September and December;
- ✓ Premium paid upfront and on the same day as the transaction;
- ✓ Options are usually American style.

Standard option

Put/Call	: Either
Underlying	: Bonds, interest rates, currencies, stocks, stock indices, commodities, etc.
Strike price	: Fixed
Expiry date	: Fixed
Payout	: At maturity of the option, it depends on the difference between the strike price and the market price.

The main advantage of the listed market is the public auction system. The trader or hedger can be sure that the premium paid or received is publicly negotiated and displayed on market screen and published the following day in the financial press and is therefore “fair”. By contrast, in the OTC option market, where the contract is between, say, the bank and its client, the buyer or writer has no way of telling whether the premium quoted is fair or otherwise. However, it has to be remembered that there are some occasions where the public auctions system is at a disadvantage to the OTC option market. For example, as liquidity is the greatest on the exchanges in the near-the-money strikes with medium maturities (two or

three months), it may not be easy for a client holding an option position which has moved deep in- or far out-of the-money to liquidate the position, particularly if the option had under a month to expire and the quantity is quite large. By contrast, the OTC option market maker will usually make a competitive price for the whole amount.

One other advantage of the traded option market is the clearinghouse system. In the OTC option market, where banks trade with each other and their clients according to their mutual assessment of credit risk, it is unfortunately very easy to "fill" a foreign exchange line. Once credit lines are "full up", not only is further option business between the two parties prohibited but also so may be other traditional forms of business, for example spot or forward foreign exchange. On the exchanges, however, the margining system allows market users the opportunity to buy or write options in substantial amounts without affecting credit lines. Thus, credit risk (the risk of the writer defaulting on the option) is therefore minimised and anonymity between counterparties can be preserved. It should be noted that currency options on the Chicago Mercantile Exchange (CME) are options on futures rather than options on the spot currency.

Hence, if a call is exercised, the buyer receives a long futures position rather than a spot position and the opposite is the case for the buyer of a put. However, the margining process can be a disadvantage, in that the mark-to-market system ensures that losses are taken on a daily basis rather than on the expiration day of the option.

Over-the-counter options have the following characteristics:

Strike rates, contract sizes and maturity are all subject to negotiation. An institution can structure its own option requirements, enabling it, for example, to make cross rate transactions;

- ✓ Maturities can be from several hours up to five years;
- ✓ The buyer has the direct credit risk on the writer;
- ✓ Only the counterparties directly involved know the price at which the option is dealt;
- ✓ The premium is normally paid with spot value from the transaction date with delivery of the underlying instrument also typically with spot value from expiry;
- ✓ Options can be either style but the majority are European style.

For example, Bank A buys from Bank B a 1.5700 European style sterling call/dollar put on 10 million pounds, with a maturity of six months. Bank A buys the option through the OTC market for a premium of $0.02 per £1 principal.

In this example:

Buyer : Bank A

Writer (seller) : Bank B

Strike price : 1.5700

Principle amount: £10 000 000

Expiry date : 6 months

Premium : $200 000 (£10m×$0.02)

STANDARDISED OPTIONS

Currencies traded– the Philadelphia Stock Exchange (PHLX) lists six dollar-based standardised currency option contracts, which settle upon exercise in the actual physical currency, while the Chicago Mercantile Exchange (CME) lists 14 currency option contracts, which includes crosses, for example European euro against the Swiss franc.

Contract size– the amounts of currency controlled by the various currency options contracts are geared to the needs of the widest possible range of participants. For example, the sizes expressed in units of currency for each option on the PHLX are:

US dollar vs Australian dollar 50 000 Australian dollar (units)

US dollar vs British pound 31 250 British pound (units)

US dollar vs Canadian dollar 50 000 Canadian dollar (units)

US dollar vs European euro 62 500 European euro (units)

US dollar vs Japanese yen 6 250 000 Japanese yen (units)

US dollar vs Swiss franc 62 500 Swiss franc (units)

Exercise style– Both American and European style options are available for mid-month and month-end options. However, longer-term options are European style options only.

Expirations– the exchange offers a variety of expirations, including mid-month, month-end and some longer-term options. For example, currency options are available for trading with fixed quarterly months of March, June, September and December.

Exercise prices– prices are expressed in terms of American cents per unit of foreign currency.

For example, a call option on euros with an exercise price of 95 would give the option buyer the right to buy euros at 95 cents per euro. On the exchange, exercise prices are set at certain intervals surrounding the current spot or market price for a particular currency. When significant price changes take place, additional options with new exercise prices are listed and commence trading. Also, strike price intervals vary for the different expiration time frames. They are narrower for the near-term and wider for the long-term options.

Premium quotation– premiums for dollar-based options are quoted in American cents per unit of the underlying currency (with the exception of Japanese yen which are quoted in hundredths of a cent). For example, a premium of 0.95 for a given European euro option is

($0.0095) per euro. Since each option is for 62 500 euros, the total option premium would be $593.75 (62 500×$ 0.0097).

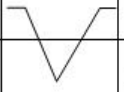
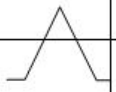
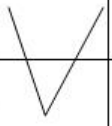
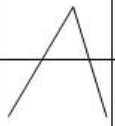
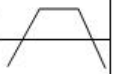
COMPARISONS

	Exchange	Over-the-counter
Contract specifications:	Standardised and customised	Customised
Regulation:	Securities and Exchange Commission (SEC)	Self-regulated
Type of market:	Open outcry, auction market	Dealer market
Counterparty to every transaction	Options Clearing Corporation (OCC)	Bank or broker
Transparency/Visible prices:	Yes	No
Orders anonymously represented in the market	Yes	No
required to mark positions daily	Yes	No

PROFIT/LOSS PROFILES FOR TEN POPULAR

OPTION STRATEGIES

Figure shows the profit/loss profiles for ten popular option strategies. All the profiles represent the option value at expiration of the option. (It should be noted that for the profit/loss column, there is an increase in spot prices from left to right and−ve denotes negative and+ve denotes positive.)

	Long call	Short call	Long put	Short put	Long butterfly	Short butterfly	Long straddle	Short straddle	Long strangle	Short strangle
Market bias	Bull	Bear	Bear	Bull	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed
Profit potential	Open	Limit	Open	Limit	Limit	Limit	Open	Limit	Open	Limit
Loss potential	Limit	Open	Limit	Open	Limit	Limit	Limit	Open	Limit	Open
Decay effect	−ve	+ve	−ve	+ve	Mixed	Mixed	−ve	+ve	−ve	+ve
Profit and loss										

Option Hedge Matrix

Underlying position – exposure →	*Long above market*	*Long at market*	*Long below market*	*Short above market*	*Short at market*	*Short below market*	*No position – spec.*
Market view of ↓							
Convinced of move up:	5–1	1–1	3–1	3–4	1–4	5–4	8–1
Afraid of move up:	6–1	2–1	4–1	4–4	2–4	6–4	
Convinced of move down:	5–3	1–3	3–3	3–2	1–2	5–2	8–2
Afraid of move down:	6–3	2–3	4–3	4–2	2–2	6–2	
Convinced market does not move:	7–1	7–2	7–3	7–4	7–5	7–6	8–3
No idea – convinced of move:	11–3	9–3	11–1	11–2	9–4	11–4	8–4
No idea – afraid of move:	10–1	9–1	10–3	10–4	9–2	10–2	

	1–1	1–2	1–3	1–4
Customer exposure	***Long at market***	***Short at market***	***Long at market***	***Short at market***
Market view	***Convinced market higher***	***Convinced market lower***	***Convinced market lower***	***Convinced market higher***
Forex hedge and Risk profile	Do nothing and full market risk if market declines	Do nothing and full market risk if market rises	Sell 100% forward and low risk but missed profit potential if market later rises	Buy 100% forward and low risk but missed profit potential if market later falls
Option purchase and Risk profile	OTM put (disaster insurance) improved. If market declines, p/l protected by long put. If market rises, earn all upside profit less option cost	OTM call (disaster insurance) improved. If market rises, p/l protected by long call. If market falls, earn all downside profit less option cost	ATM put improved. If market declines, p/l protected by long put. If market rises, earn all upside profit less option cost	ATM call improved. If market rises, p/l protected by long call. If market falls, earn all downside profit less option cost
Option sale and Risk profile	ATM or slightly OTM call Earn good extra income, but major risk if market starts dropping against expectations	ATM or slightly OTM put Earn good extra income, but major risk if market starts rising against expectations	ATM call Earn good extra income, but if ever market rises against expectations, potential upside profit is missed	ATM put Earn good extra income, but if ever market moves against expectations potential downside profit is missed

	2–1	2–2	2–3	2–4
Customer exposure	***Long at market***	***Short at market***	***Long at market***	***Short at market***
Market view	***Afraid market higher***	***Afraid market lower***	***Afraid market lower***	***Afraid market higher***
Forex hedge and Risk profile	Do partial cover to reduce risk Market risk on uncovered portion	Do partial cover to reduce risk Market risk on uncovered portion	Sell 100% forward Low risk but missed profit potential if market later rises	Buy 100% forward Low risk but missed profit potential if market later falls
Option purchase and Risk profile	ATM put (insurance) Improved. If market declines, p/l protected by long put. If market rises, earn all upside profit less option cost	ATM call (insurance) Improved. If market rises, p/l protected by long call. If market falls, earn all downside profit less option cost	OTM put (disaster insurance) Protection at lower levels, but at relatively moderate cost. Gives the staying power to fish for better levels to sell	OTM call (disaster insurance) Protection at lower levels, but at relatively moderate cost. Gives the staying power to fish for better levels to buy
Option sale and Risk profile	OTM call at target rate Earn extra upfront premium income but downside risk not protected	OTM put at target rate Earn extra upfront premium income but upside risk not protected	OTM call Earn some extra income while leaving room to profit from an upward movement if it ever happens	OTM put Earn some extra income while leaving room to profit from a downward movement if it ever happens

	3–1	3–2	3–3	3–4
Customer exposure	***Long below market***	***Short above market***	***Long below market***	***Short above market***
Market view	***Convinced market higher***	***Convinced market lower***	***Convinced market lower***	***Convinced market higher***
Forex hedge and Risk profile	Do nothing and pray Full upside potential. If market falls, loss may surpass profit margin	Do nothing and pray Full downside potential. If market rises, loss may surpass profit margin	Sell forward to lock in profit Low risk but possible missed profits if market later rises	Buy forward to lock in profit Low risk but possible missed profits if market later falls
Option purchase and Risk profile	OTM put (disaster insurance) Protects against possible market fall. Allows full upside profit less option cost	OTM call (disaster insurance) Protects against possible market rise. Allows full downside profit less option cost	ATM put Locks in minimum selling price but allows full participation in further market rise less option cost	ATM call Locks in minimum purchase price but allows full participation in any further market fall less option cost
Option sale and Risk profile	OTM call at target rate Earn extra upfront income but downside risk not protected if market rises	OTM put at target rate Earn extra upfront income but upside risk not protected if market drops	OTM call Limits upside potential but generates immediate income that helps protect against loss	OTM put Limits downside potential but generates immediate income that helps protect against loss

	4–1	4–2	4–3	4–4
Customer exposure	***Long below market***	***Short above market***	***Long below market***	***Short above market***
Market view	***Afraid market higher***	***Afraid market lower***	***Afraid market lower***	***Afraid market higher***
Forex hedge and Risk profile	Do nothing and pray Full market risk if market declines and wipes out profit	Do nothing and pray Full market risk if market rises and wipes out profit	Sell forward to lock in profit Low risk but possible missed profits if market later rises	Buy forward to lock in profit Low risk but possible missed profits if market later falls
Option purchase and	OTM put (disaster insurance)	OTM call (disaster insurance)	OTM put at break-even or slightly higher	OTM call at break-even or slightly lower
Risk profile	Protects against possible market fall. Allows full upside profit less option cost	Protects against possible market rise. Allows full downside profit less option cost	Protects break-even rate while minimising option cost. Provides the staying power	Protects break-even rate while minimising option cost. Provides the staying power
Option sale and	OTM call	OTM put	ATM call	ATM put
Risk profile	Earn premium, which helps to protect against possible market fall	Earn premium, which helps to protect against possible market rise	Locks in profit at current level. Provides extra income but further upside profit potential is lost	Locks in profit at current level. Provides extra income but further downside profit potential is lost

	5–1	5–2	5–3	5–4
Customer exposure	***Long above market***	***Short below market***	***Long above market***	***Short below market***
Market view	***Convinced market higher***	***Convinced market lower***	***Convinced market lower***	***Convinced market higher***
Forex hedge and	Trust yourself. Do nothing and pray.	Trust yourself. Do nothing and pray.	Close out and take loss	Close out and take loss
Risk profile	High risk. Cannot sell forward as this would lock in loss	High risk. Cannot buy forward as this would lock in loss	Locked in loss	Locked in loss
Option purchase and	OTM put	OTM call	ATM put	ATM call
Risk profile	Risk reduced. Known downside maximum risk gives staying power	Risk reduced. Known downside maximum risk gives staying power	Risk locked at current levels. No further loss will be seen	Risk locked at current levels. No further loss will be seen
Option sale and	OTM call	OTM put	ATM call	ATM put
Risk profile	No increased risk but profit potential limited to target level	No increased risk but profit potential limited to target level	Earn good income but must forego any profit potential. Risk increases if market recovers against expectations	Earn good income but must forego any profit potential. Risk increases if market recovers against expectations

	6–1	6–2	6–3	6–4
Customer exposure	***Long above market***	***Short below market***	***Long above market***	***Short below market***
Market view	***Afraid market higher***	***Afraid market lower***	***Afraid market lower***	***Afraid market higher***
Forex hedge and Risk profile	Do nothing and pray High risk. Cannot sell forward as this would lock in loss	Do nothing and pray High risk. Cannot buy forward as this would lock in loss	Close out and take loss Locked in loss	Close out and take loss Locked in loss
Option purchase and Risk profile	ATM put Risk reduced. Protects against further market decline. Allows full participation in expected market rise less option cost	ATM call Risk reduced. Protects against further market rise. Allows full participation in market fall less option cost	Put at the holding price Risk reduced. Protects against realising losses. Allows full participation in possible market rise less option cost	Call at the holding price Risk reduced. Protects against realising losses. Allows full participation in possible market fall less option cost
Option sale and Risk profile	OTM call (at target level) Limits upside profit but premium gained will help offset market loss	OTM put (at target level) Less risk. Limits profit but premium earned helps offset market loss	OTM call Limits upside profit but premium earned will help offset market loss	OTM put Less risk. Limits downside profit but premium earned helps offset market loss

	7–1	7–2	7–3	7–4	7–5	7–6
Customer exposure	***Long above market***	***Long at market***	***Long below market***	***Short above market***	***Short at market***	***Short below market***
Market view	***Convinced market does not move***	***Convinced market does not move***	***Convinced market does not move***	***Convinced market does not move***	***Convinced market does not move***	***Convinced market does not move***
Forex hedge and	Stay long the higher yield currency	Stay long the higher yield currency	Stay long the higher yield currency	Stay long the higher yield currency	Stay long the higher yield currency	Stay long the higher yield currency
Risk profile	Try to capture the interest rate differential while market is quiet	Try to capture the interest rate differential while market is quiet	Try to capture the interest rate differential while market is quiet	Try to capture the interest rate differential while market is quiet	Try to capture the interest rate differential while market is quiet	Try to capture the interest rate differential while market is quiet
Option purchase and Risk profile	Not advised	Not advised	Not advised	Not advised	Not advised	Not advised
Option sale and	Call at holding price	ATM call	Call at holding price	Put at holding price	ATM put	Put at holding price
Risk profile	Avoid locking in loss. Not protected if market falls	Earn premium. Not protected if market declines	Lock in current profit, but still exposed to market decline	Lock in current profit, but still exposed to risk of rise	Earn premium. Not protected if market rises	Avoid locking in current loss. Not protected if market rises

	8–1	8–2	8–3	8–4
Customer exposure	***None***	***None***	***None***	***None***
Market view	***Convinced market higher***	***Convinced market lower***	***Convinced market does not move***	***No idea of direction but convinced of violent move***
Forex hedge and Risk profile	Buy foreign exchange Full downside risk	Sell foreign exchange Full upward risk	Not advised	Not advised
Option purchase and Risk profile	ATM call Expensive but has maximum profit potential if view is right and market rises	ATM put Expensive but has maximum profit potential if view is right and market declines	Not advised	ATM call and put Very expensive but has guaranteed profit potential if view is right and market moves substantially either way (beware of time decay)
Option sale and Risk profile	ATM put Nice upfront income but risky if ever view is wrong and market declines	ATM call Nice upfront income but risky if ever view is wrong and market rises	Both ATM call and put Very nice upfront income but very risky if ever view is wrong and market becomes volatile	Not advised

	9–1	**9–2**	**9–3**	**9–4**
Customer exposure	***Long at market***	***Short at market***	***Long at market***	***Short at market***
Market view	***No idea – afraid of move***	***No idea – afraid of move***	***No idea – but convinced of a move***	***No idea – but convinced of a move***
Forex hedge and Risk profile	Sell forward partially Market risk on unhedged portion	Buy forward partially Market risk on unhedged portion	Sell forward partially Possible large market risk on unhedged portion	Buy forward partially Possible large market risk on unhedged portion
Option purchase and Risk profile	Slightly OTM put Low risk, protects against market falls. Profit from market rise less cost of option	Slightly OTM call Low risk, protects against market rise. Profit from market fall less cost of option	ATM put Low risk, protects against market falls. Profit from market rise less cost of option	ATM call Low risk, protects against market rise. Profit from market fall less cost of option
Option sale and Risk profile	OTM call If market rises, profit potential limited to strike. If market drops, upfront premium helps to offset losses if market declines	OTM put If market falls, profit potential limited to strike. If market rises, upfront premium helps to offset losses if market drops	Not advised	Not advised

	10–1	10–2	10–3	10–4
Customer exposure	***Long above market***	***Short below market***	***Long below market***	***Short above market***
Market view	***No idea – afraid of move***	***No idea – afraid of move***	***No idea – afraid of move***	***No idea – afraid of move***
Forex hedge and Risk profile	None High risk	None High risk	Sell forward partially Market risk on unhedged portion	Buy forward partially Market risk on unhedged portion
Option purchase and Risk profile	ATM put Protects against market fall but allows upside profit potential less option cost	ATM call Protects against market rise but allows downside profit potential less option cost	ATM put Locks in minimum selling price/profit but allows full participation in further market rise less option cost	ATM call Locks in minimum buying price/profit but allows full participation in later market fall less option cost
Option sale and Risk profile	OTM call Limits upside profit potential but premium earned helps to offset market loss	OTM put Limits downside profit but premium earned helps to offset market loss	OTM call Limits upside profit but premium earned helps to offset any market declines	OTM put Limits downside profit but premium earned helps to offset any losses if market rises

	11–1	11–2	11–3	11–4
Customer exposure	***Long below market***	***Short above market***	***Long above market***	***Short below market***
Market view	***No idea – but convinced of a move***	***No idea – but convinced of a move***	***No idea – but convinced of a move***	***No idea – but convinced of a move***
Forex hedge and Risk profile	Sell forward partially Lock in some profit, but exposed to risk for residual position	Buy forward partially Lock in some profit, but exposed to risk for residual position	Sell forward partially Lock in some loss and still exposed to risk for residual position	Buy forward partially Lock in some loss and still exposed to risk for residual position
Option purchase and Risk profile	ATM put Locks in profits and gives peace of mind to profit from any up or down swing in market less option cost	ATM call Locks in profits and gives peace of mind to profit from any up or down swing in market less option cost	ITM put at holding price Locks in losses but gives staying power to look for an opportunity if ever market moves favourably	ATM call Locks in losses but gives staying power to look for an opportunity if ever market moves favourably
Option sale and Risk profile	Not advised	Not advised	Not advised	Not advised

Notes prepared from the following books

1. Multinational Financial Management by Alan C Shapiro, Wiley

2. A Currency Options Primer by ShaniShamah, Wiley

International Finance

(Dr. Bappaditya Biswas)

Module – II

International Taxation

Contents: Tax Equity and Tax Neutrality –Tax Havens – Double Taxation –Relief from Double Taxation – Tax Treaties – Treaty Shopping – Base Erosion Profit Sharing - Double Taxation Avoidance Agreement- Models of DTAA

1. Introduction

The term international taxation is only a misnomer because there is actually no international agency which is responsible for taxing international income. What it simply means is the impact of taxation on an internationally involved firm. Taxation at the international level has important implications for the financial manager. Its influence is next in importance only to foreign exchange. International tax considerations are fundamental to financial management decisions of where to invest, the form of the business organization, the source of finance, revenue recognition, how to market, transfer pricing and a host of other decision areas. A host of national tax systems and tax treaties encompass the area of international taxation.

The following are the causes of the complications faced in the course of International Taxation:

a. In case of international taxation, problems arise as much as in international trade, as more than one country is involved and each country would like to tax on the economic activity in their respective countries.

b. No international law is applicable to fiscal laws of each country.

c. Developing countries, after achieving independence, have assumed larger role in socio-economic development resulting in Government expenditure, which pressurizes Governments, which need more revenue to meet the ever increasing expenditure on developmental activities.

d. Because of globalization any person in the world can have access to raw material, labour and technology in any part of the world. Growth in international trade and investment is adding to this.

2. Tax Equity & Tax Neutrality

There are two concepts of taxation that are characteristic of most tax systems: equity and neutrality. Each is oriented toward achieving a status of equality within the tax system. The economic difference between the two concepts lies in their effect on decision making. Whereas tax equity is accomplished by ensuring that equal sacrifices are made in bearing the tax burdens, tax neutrality is achieved by ensuring that decisions are unaffected by the tax laws.

2.1. Tax Equity

The basis of tax equity is the criterion that all taxpayers in a similar situation are subject to the same rules. This means that tax payers who are similarly situated should be similarly treated. Thus taxes paid on income earned abroad should be regarded as equivalent to the payment of domestic taxes on domestic income and the income of a foreign branch should be taxed in the same manner that the income of a domestic branch is taxed. Under ideal conditions, adherence to the equity principle would neutralize the effect of taxes on decisions about whether to locate profit seeking operations at home or abroad.

2.1. Tax Neutrality

A neutral tax is one that would not influence any aspects of the investment decision, such as the location of the investment or the nationality of the investor. The basic justification for tax neutrality is economic efficiency. World welfare will be increased if capital is free to move from countries where the rate of return is low to those where it is high. Therefore, if the tax system distorts the after-tax profitability between two investments, or between two investors, leading to a different set of investments being undertaken, then gross world product will be reduced. Tax neutrality can be separated into domestic and foreign neutrality.

a. **Domestic Neutrality:** This implies the equalization of tax burdens for similar activities at home and abroad. Under this viewpoint, a foreign subsidiary is simply a domestic concern that happens to be operating abroad. The key issues to consider here are whether the marginal tax burden is equalized between home and host countries and whether such equalization is desirable. This form of neutrality involves (1) uniformity in both the applicable tax rate and the determination of taxable income and (2) equalization of all taxes on profits.

   The lack of uniformity in setting tax rates and determining taxable income stems from differences in accounting methods and governmental policies. There are no universal

principles to follow in accounting for depreciation, allocating expenses and determining revenue. Therefore, different levels of profitability for the same cash flows are possible. Moreover, governmental policy in the areas of tax allocation and incentives is not uniform. Some capital expenditures are granted investment credits while others are not, and the provisions for tax loss carry backs and carry forwards vary in leniency as well. Thus, in many cases, equal tax rates do not lead to equal tax burdens.

b. Foreign Neutrality: This means that tax burdens of foreign affiliates should be equal to those experienced by local competitors. Domestic affiliates abroad are looked upon as foreign companies that happen to be owned by domestic residents. The foreign neutrality may be illustrated in the following way considering US as the home country:

The theory behind foreign neutrality in taxation is that the tax burden placed on the foreign subsidiaries of US firms should equal that imposed on foreign owned competitors operating in the same country. There are basically two types of foreign competitors that the US subsidiary faces: the firm owned by residents of the host country and the foreign subsidiary of a non-US corporation. Since other countries gear their tax systems to benefit domestic firms, the United States would have to modify its tax system to that of other countries to achieve foreign neutrality. This modification would mean foregoing taxation of income from foreign sources. In other words, the corporation's foreign affiliate would be impacted by taxes only in the country of operation. Certainly it is inconsistent with the principle of domestic neutrality.

Most major capital exporting countries, including the United States, Germany, Japan, Sweden, and Great Britain, follow a mixed policy of foreign and domestic tax neutrality whereby the home government currently taxes foreign branch profits but defers taxation of foreign subsidiary earnings until those earnings are repatriated. Host taxes on branch or subsidiary earnings may be credited against the home tax; the credit is limited by the home tax or host tax, whichever is lower. However, this latter provision violates domestic neutrality.

Several home countries, including France, Canada, and the Netherlands, fully or partially exempt foreign subsidiary and/or branch earnings from domestic taxation. Other countries, such as Italy, Switzerland, and Belgium, exclude a portion of foreign income when calculating the domestic tax liability. The policy of equity in taxation is also justified on many of the same grounds as neutrality in taxation.

3. Principles of Taxation

a. Nationality Principle: States tax their citizens, nationals and domestic companies on their worldwide income no matter where they may reside.

b. Residency Principle: States tax the worldwide income of persons legally residing within their territories.

c. Source Principle: States tax a taxpayer's income only from sources within their territorial jurisdiction. The source rule is also sometimes referred to as the "classification or assignment rule" as it classifies the income with reference to the source. The country where the income is generated gets the right to tax it. The International Fiscal Association in 38th Congress in Buenos Aires has resolved that the source system of taxation is preferable. However, this may work to the disadvantage of developing countries with lesser economic resources. Therefore, most **Double Taxation Avoidance Agreements (DTAAs)** have a combination of both sources and residence form of taxation.

These three bases for imposing taxation may be used in conjunction with each other.

Priority** of **Principles

a. Source Principle: This is usually regarded as the normal or default rule.

b. Nationality and **Residency Principles:** These are usually treated as supplemental and subordinate rules.

4. Foreign Tax Incentives

Countries eager to accelerate their economic development are keenly aware of the benefits of international business. Many countries offer tax incentives to attract foreign investment. These are:

a. **Tax Holidays:** This may be of tax-free cash grants applied toward the cost of fixed assets of new industrial undertakings or relief from paying taxes for certain time periods. Other forms of temporary tax relief include reduced income tax rates, tax deferrals and reduction or elimination of various indirect taxes.

b. **Tax Havens:** Some countries, particularly those with few natural resources, offer permanent tax inducements. These countries are called tax havens. Tax havens are mainly allowed in islands which are offshore financial centres. They include the following:

   i. The Bahamas, Bermuda and the Cayman Islands which have no taxes at all.

   ii. The British Virgin Islands and Gibraltar which have very low tax rates.

   iii. Hong Kong, Liberia and Panama which tax locally generated income but exempt income from foreign sources.

5. Tax Havens and the Multinational Corporation

A perennial charge against the multinational corporation is its use (or misuse) of tax havens to shield income from the local tax collector. Tax haven countries include those countries whose moderate level of taxation and liberal tax incentives enable the multinational corporation to substantially reduce or defer taxation on income channelled through these countries.

Factors that are to be considered by companies while choosing a tax haven

Before selecting the type of tax haven to use, the Multinational Corporation (MNC) must develop a framework to evaluate its projected needs against the advantages of the various tax havens. Factors that are usually considered in choosing a tax haven include the following:

a. The political and economic stability of the country and the integrity of its government.

b. The attitude of the country towards tax haven business.

c. The other taxes, aside from income taxes, it imposes.

d. Tax treaties (Some tax havens owe their very existence to the fact that they are parties to advantageous tax treaty arrangements. Other tax haven countries are party to few, if any, tax treaties).

e. The lack of exchange controls (Although some tax havens have exchange controls, most offshore companies organized by non-residents are granted relative freedom from such controls).

f. Liberal incorporation laws that minimize both the cost of incorporation and the length of time it takes to incorporate.

g. Banking facilities

h. Infrastructure facilities such as transportation and telecommunication facilities with the rest of the world.

i. The long range prospects for continued freedom from taxation.

After the selection of a tax haven, the next relevant consideration is the form of organization outside the home country. This choice entails the branch versus subsidiary decision, as well as the use of any tax incentive organization. There are three key factors underlying this decision about the form of organization.

The first factor is the projected cash flows in the country under consideration. A forecast of several years of initial operating losses in any country would be significant in weighing the desirability of operating initially as a branch as branch operation may allow the deduction of those losses under the provisions of taxation.

The second factor is the attitude of the parent corporation toward repatriation of funds. The tax-free use of funds can be an important factor in the determination of working capital needs. Also, by allowing earnings to accumulate offshore, they may be repatriated tax free if certain forms of organization that allow for tax free liquidation are undertaken.

The third factor to consider is alternative uses for funds. If the parent company has other offshore facilities, the earnings from some facilities can provide cash flows for other subsidiaries. This factor is especially important for a parent that is constantly seeking out and developing new foreign investment opportunities.

With the preceding considerations and factors in mind, the Multinational Corporation (MNC) can make a selective examination of possible locations. The focus here is on the relative advantages and disadvantages of each country based on its tax laws. The objective of tax planning is to interpret laws correctly to legally avoid paying unnecessary taxes, rather than to escape corporate obligations under the law.

6. Types of Tax Haven Countries

The various tax havens of the world can be grouped into four types:

Type 1: Tax havens that have no income or capital gains tax or gift and estate tax

Type 2: Tax havens that do impose taxes, but whose rate is very low

Type3: Tax havens that tax income from domestic sources, but exempt all income from foreign sources

Type 4: Countries that allow special tax privileges and are suitable for tax havens only for selected purposes

a. Tax Havens that have no Income or Capital Gains Tax or Gift and Estate Tax

This group encompasses many of the tax havens in the Caribbean, such as the Bahamas, Bermuda and the Cayman Islands. The Bahamas levies a small tax of $ 100 per year on all Bahamian companies. It has no tax treaty with any country requiring it to furnish information to other countries. Since 1960, manufacturing companies have been getting long term guarantees against taxes. It has moderate corporate and incorporation fees. In the Cayman Islands, foreign owned companies are guaranteed against taxes for 20 years. As well, the Cayman Islands have no tax treaties and have moderate corporate and incorporation fees.

b. Tax Havens that do impose taxes, but whose rate is very low

A country representative of this group would be the British Virgin Islands because of its 12% income tax rate. However, the British Virgin Islands' usefulness as a tax haven in relation to other countries is somewhat diminished by its 12% withholding tax on dividends. Another major tax heaven is the Netherlands Antilles, a colony of the Netherlands located a few miles off the coast of Venezuela. Most business is centred in Curacao. Income taxes are very low, and there are special tax privileges to shipping, aviation and holding companies.

c. Tax Havens that Tax Income from Domestic Sources, but Exempt all Income from Foreign Sources

A country whose tax benefits are characteristic of this group is Hong Kong. Although Hong Kong imposes a nominal tax of 15% on Hong Kong sourced income, foreign source income is completely exempt. Nor is there any tax on capital, capital gains, or dividends remitted to foreign shareholders. Another popular country under this group is Panama, which has a tax on domestically sourced income but none on foreign source income of companies located in Panama. It also has no income tax treaties and encourages incorporation in Panama through very liberal incorporation laws that allow the articles of incorporation to be written in any language. Panama's role as a secure tax haven, however, has been diminished by the political unrest in that country.

d. Countries that Allow Special Tax Privileges and are Suitable for Tax Havens Only for Selected Purposes

This group mainly includes those countries that are trying to promote development in certain regions or encourage industrialization within the country. The most notable example here is the Republic of Ireland, which exempts from taxation the export earnings of corporations that set up manufacturing operations in certain regions. Also included in this group is Puerto Rico, which grants tax exemption for up to 17 years for firms to set up operations in certain less developed zones.

There are a few European tax haven countries that should be mentioned: Switzerland, the Netherlands and Liechtenstein.

Switzerland has some unique enticements for the tax avoider. First, it does not tax profits that locally incorporated businesses earn outside the country. However, Switzerland has a decentralized government consisting of 25 sovereign cantons, and most direct taxes are levied by the cantons and not the federal government. The cantons do impose a nominal tax on capital. Second, Swiss laws allow corporations extraordinary freedom from official surveillance. Tax evasion is not a criminal offence in Switzerland, and even the Swiss federal tax authorities know that local banks will refuse their requests for information.

The Netherlands is a favourite tax haven for holding companies. A holding company in the Netherlands does not pay any tax on income and capital gains emanating from its direct (not portfolio) participations in either domestic or foreign subsidiaries. Moreover, the tax treaties that the Netherlands has with other countries almost eliminate the withholding tax on dividend distributions to the parent company.

Liechtenstein is a tiny principality that is tucked picturesquely in the Alpine scenery; it has 20,000 people, 7,000 cows, and about 15,000 "foreign legal entities." These entities are companies, partnerships, and other vehicles through which foreigners can hide their money, free of virtually all taxes and safe from anybody's curiosity. The most famous Liechtenstein corporate device is the Anstalt—a company that can be used for virtually any purpose. Its only visibility is on the public register, which merely gives the Anstalt's name, capital at formation and the name of its Liechtenstein representative— by law there must be at least one resident Liechtensteiner on the board.

7. Forms of Tax Avoidance in Tax Havens

Multinational Corporations face a perennial charge for their misuses of tax havens to shield income from the local tax collector.

The tax avoidance in tax havens takes place broadly by the following two methods:

a. Profit Diversion

b. Profit Extraction

a. Profit Diversion

Under this, profit is diverted away from high tax jurisdiction into the tax haven thereby avoiding income tax on the money thus diverted. For example Company X, which is, a Multinational Corporation (MNC) sells at a low price to a subsidiary in a tax haven country that in turn sells worldwide the same product at high prices.

b. Profit Extraction

In this method, a company in a tax haven country renders services to an affiliated company in a high tax jurisdiction and extracts money from that jurisdiction in the form of consultancy fees, licensing fees, technology fees, royalty etc., as being grossly inflated so that effectively money is brought into the tax haven while the high tax jurisdiction subsidiary claims these fees as deductible expenses.

8. Double Taxation

Double Taxation means taxation of the same income in two countries, once in the home country and again in the host country. It may so happen that a tax payer is a national / resident of one country but earns income from a source located in another country. If the source principle and the nationality/residency principle were to be applied simultaneously and the tax payer is to pay tax in two countries, the cost of international operations may become almost prohibitive.

It is of relevance to mention here, no rules of international law prohibit international double taxation. So it is for the countries in the international arena to solve double taxation problems.

Double taxation of income is a great disincentive as-

(i) It hampers free flow of capital, and

(ii) Becomes a prohibitive burden on taxpayers leading to decline in foreign investments.

Hence, negotiation of tax treaties between different countries became inevitable. These agreements are in the nature of contracts between the countries, which have entered into such agreements.

Double taxation may happen in two ways:

a. **Juridical Double Taxation:** When the same income is taxed in two countries in the hands of a single taxpayer.

b. **Economic Double Taxation:** Taxation of the same income in the hands of two taxpayers. Taxation of same income in more than one hand amounts to economic double taxation so that the revenue sharing between the countries gets distorted e.g., capital expenditure being disallowed while income is taxed in the hands of the recipient. Another example is when income earned by a corporation is taxed both to the corporation and to its shareholders when distributed as a dividend or in case of a partnership – income is taxable in the hands of partner in one contracting state and in the hands of partnership in the other contracting state.

Therefore some method has to be devised for alleviating this problem and give some relief to the internationally operating firms or other tax payers.

Elimination of double taxation is a must for international trade to thrive. This is because the basic rule with regard to taxation is that tax should not interfere with business in investment decisions. In other words, tax must remain neutral and in the background. Though tax is an important business driver, it cannot become the sole consideration for an investment decision.

9. Systems for Relief from Double Taxation

a. **Exemption System:** Income is taxed in one state (commonly a host state) and exempt from tax in a second state (commonly the home state) i.e., the residence State grants an exclusive right to the source State to tax the income. This method is followed in countries like France and Germany. This method may be applied in two ways:

(i) **Full Exemption:** In this method the residence State does not take into account the income earned in the source State at all while determining the tax to be levied on the global income of the non resident.

(ii) **Exemption with Progression:** The residence State does not tax the income but takes it into account in computing the total income to be taxed.

b. **Tax Credit System:** The home country allows credit against tax liability on the worldwide income of its resident to the extent of tax paid by such residents in the host country. The effect is that the tax payer has to pay the higher of the home country and host country taxes. This method is followed in countries like USA, UK, Canada, Australia and Japan.

Under this method the resident State retains its right to tax the income but allows credit/deduction for tax paid in the source State. Under this method the residence State treats the tax paid in the source country as if the tax was paid to itself. This method is also applied in two main methods:

(i) Full Credit: In this method full credit is given for the total tax paid in the source State.

(ii) Ordinary Credit: In this method the credit is restricted to the tax which the State of residence would have levied on that income.

Full Credit provides for exemption of tax on the income which has been taxed in the source country. Ordinary Credit deals with certain cases of certain income like dividend, interest and royalty which both the States have a right to tax; credit is given to the extent of the tax paid.

c. Tax Sparing Credit System: This is a special arrangement between a developing country and a developed country according to which the developing nation grants a tax holiday to encourage foreign investment. At the other side, the developed nation allows tax credit to the investor as if tax has actually been paid in the host country.

d. Deduction System: A taxpayer deducts the tax paid to one state from the profits liable to taxation in the second state.

Most countries follow a combination of the exemption method, the credit method and the deduction method to allow relief from double taxation. A few countries however have certain very interesting variations. For example, Belgium follows what can be called a 'reduction' method. Under this method, income earned abroad is taxed at a concessional rate, half the rate at which domestic income is taxed.

10.Tax Treaties

'Treaty as understood by a layman is "a formally concluded and ratified agreement between independent nations". Tax treaties are generally a matter of bargain taking into consideration the economic interests of the countries involved. Some concessions may be made keeping in mind political and trade considerations.

Tax Treaties attempt to eliminate double taxation and try to achieve balance and equity. They aim at sharing of tax revenues by the concerned states on a rational basis. Tax treaties do not always succeed in eliminating Double Taxation, but contain the incidence to a tolerable level.

The purpose of tax treaties is to alleviate the problem of double taxation and other matters, including tax incentives, tax avoidance and tax evasion. The common objective of the Governments while negotiating treaties is to ensure that tax revenues are shared in a manner most optimal to both. The common objectives of Treaties, irrespective of which Model is used as a base, would be to remove the burden of double taxation which herms free movement of goods, capital, services, technology and persons between countries.

Double Taxation Avoidance Agreements (DTAAs) or tax treaties play an important role in encouraging an inflow of investments into the country. A businessman would like to know the returns after tax on his investments. DTAAs enable a non resident to estimate his liabilities and duties towards compliance with the foreign countries' tax laws.

While negotiating DTAAs, countries try to bargain hard in their best interests and often a compromise is reached depending on each country's strengths and is also influenced politically by bargaining power capacity. Therefore, keeping all interests in mind, a country may have to give up the right to tax one source of income but may want to justify taxing another source of income, which arises in its territory e.g. a country with a busy port would push for exemption of shipping income for its residents and agree to give concessions to the partner country which would be in the interest of its residents.

The general tax policies toward the multinational firm are modified somewhat by a bilateral network of tax treaties designed to avoid double taxation of income by two taxing jurisdictions. Although foreign tax credits help to some extent, the treaties go further in that they allocate certain types of income to specific countries and also reduce or eliminate withholding taxes.

These tax treaties should be considered when planning foreign operations because under some circumstances, they can provide for full exemption from tax in the country in which a minor activity is carried on (one that does not require a permanent establishment in the country). The general pattern of the treaties is for the two treaty countries to grant reciprocal reductions in withholding taxes on dividends, royalties and interests.

11.Treaty Shopping and Tax Havens

Concept

"*Treaty shopping*" connotes a premeditated effort to take advantage of the international tax treaty network and a careful selection of the most favorable tax treaty for a specific purpose2. There may be a variety of purposes for which taxpayers engage in treaty shopping: claiming an otherwise unavailable reduction or exemption of (withholding) taxes in the source State of the income; claiming an otherwise unavailable tax exemption in the residence State; claiming the benefit of a tax sparing credit; claiming taxation in the source state at a lower tax rate than the one applicable in the residence State if the residence State gives relief for double taxation by way of exemption etc.

Example

The most classical example of "*Treaty shopping"* occurs where a person resident of a given State (State R) who expects to derive dividends, interest or royalties sourced in another State (State S) sets up an entity in a third State (State C) that will receive the dividends, interest and royalties in a more tax beneficial way than if such income were paid directly from State S to the person resident of State R. The tax advantage results from the fact that the tax treaty between State S and State C provides for a more advantageous withholding tax rate in State S on dividends, interest and royalties paid to a State C resident than the rate that would apply in State S if the income were paid directly to the State R resident because there is either no tax treaty applicable between State R and State S or, if there is one, it provides for less generous withholding tax rates than those available to the State C resident under the treaty between S and C. The entity in State C operates as an intermediary between the source State (S) of the dividends, interest and royalties and its controlling shareholder in State R because it pays on the income received (in the same or another form) to such controlling shareholder. In view of its channeling function, the entity established in State C is typically, and also for the purposes of this study, referred to as "*a conduit company"* or "*a conduit*". State C will be referred to as the "*conduit state*".

Conduit Companies

"*Treaty or Directive*" shopping refers to the situation in which a person resident of a given State who is not entitled to the benefits of a tax treaty or an EC-Directive sets up an entity in another State in order to obtain those treaty or Directive benefits that are not directly available to him. Such entity is called the "*conduit company*".

Just as the domestic law can be used sometimes more than fairly to the advantage of a taxpayer, the Double Taxation Avoidance Agreement (DTAA) too is exploited. This is popularly known as "Treaty Shopping". A non resident seeking shelter under a DTAA is still open to domestic assessment if the tax authorities feel that he is taking a wrong advantage of provisions of the DTAA or has structured the agreement in such a way so as avail the DTAA benefits which are not otherwise available to him. The tax authorities may deny the benefits of the DTAA. In fact, most litigation is centred on treaty shopping.

There are expressions like 'tax havens', 'offshore companies' and 'offshore funds' in the field of international taxation. These tax havens attract investments as the rate of tax on corporate profits is low and generally exempt dividends and capital gains on alienation of movable assets like shares and sometimes immovable property also.

The term 'offshore' is derived from holding the assets and investments outside the home country. These offshore centres and tax havens are unique in not only tax advantages, but their often 'no questions asked' policy and secrecy norms, and easy exchange control norms besides tax. These are also factors that attract capital. Though of course here, what is sauce for the goose is poison for the gander as dealing with offshore companies in tax havens is a nightmare for the revenue authorities. These 'tax havens' encourage tax planning which borders on tax evasion and are generally reluctant to exchange information about shell companies. There is a debate on whether this leads to economic stability for anyone including the tax havens.

Even tax havens have their own 'special offers' e.g. Bermuda and Cayman Islands are zero corporate tax havens. Greece and Cyprus offer special incentives for shipping income and therefore, very often a ship flies a Greek flag.

Tax havens also permit conduit flow-through companies to be set up. These conduit companies work by eroding their tax base by either expatriating profits or transferring them to another form in the form of tax deductible expenses. The most popular use of tax havens is for sale of royalty and Intellectual Property Rights (IPR). These are transferred to a tax haven company (at the time of transfer the IPR would not have gathered a significant commercial value and it is also essential that subsequent sale should be tax neutral). The rate of tax on royalty is also generally low in these tax havens. The conduit company will allow use of the IPR. The royalty received will not be subject to withholding taxes based on local laws and DTAAs entered into by the tax havens. The profits will then be routed back to the main company. In fact, it is also possible that the funds

are allowed to accumulate in the tax haven and will be used to finance other capital projects or acquisitions.

Tackling Treaty Shopping

Various countries have evolved rules in their domestic and Double Taxation Avoidance Agreement (DTAA) law to tackle tax evasion, e.g., the ability to compute and adopt an arm's length price in respect of related transaction, or the courts going into the substance over form of the transaction to sniff out tax evasion.

Treaty Shopping must be checked because ultimately in a Treaty one country is sacrificing its right to tax the income in favour of another country. It is not fair if that benefit goes to an unintended third country. Though the resident country may ultimately get to tax the profits on repatriation, there is a deferment of collection of revenue which may be a complete loss if the profits are not ultimately repatriated.

12.Base Erosion Profit Sharing (BEPS)

Base Erosion and Profit Shifting (BEPS) refers to tax planning strategies that exploit gaps and mismatches in tax rules to make profits 'disappear' for tax purposes or to shift profits to locations where there is little or no real activity but the taxes are low, resulting in little or no overall corporate tax being paid. This has become a critical issue since governments have to cope with less revenue and a higher cost to ensure compliance. Moreover, BEPS undermines the integrity of the tax system, as reporting of low corporate taxes is considered to be unfair. In developing countries, the lack of tax revenue leads to significant under-funding of public investment that could help foster economic growth. Further, when tax laws permit businesses to reduce their tax burden by shifting their income away from jurisdictions where income producing activities are conducted, other taxpayers, especially individual taxpayers in that jurisdiction bear a greater share of the burden. This gives rise to tax fairness issues on account of individuals having to bear a higher tax burden. Also, enterprises that operate only in domestic markets, including family-owned businesses or new innovative businesses, may have difficulty competing with MNEs that have the ability to shift their profits across borders to avoid or reduce tax. Fair competition is harmed by the distortions induced by BEPS.

In the background of the above repercussions, in February 2013, the OECD published a report on "Addressing Base Erosion and Profit Shifting" iterating the need for analyzing

the issue of tax base erosion and profit shifting by global corporations. The OECD followed it up with publishing draft Action Plan on Base Erosion and Profit Shifting (BEPS Action Plan) in July 2013 which came to final fruition in October 2015. The BEPS action plan identifies fifteen actions to address BEPS in a comprehensive manner and sets a deadline to implement those actions.

The Action Plans were structured around three fundamental pillars viz.:

(i) Introducing coherence in the domestic rules that affect cross-border activities.

(ii) Reinforcing of 'substance' requirements in existing international standards; Alignment of taxation with location of value creation and economic activity; and

(iii) Improving transparency and tax certainty.

13.Double Taxation Avoidance Agreements (DTAAs)

DTAAs aim at eliminating or reducing the tax burden of a resident of a Contracting State[*] engaged in transactions with a resident of another Contracting State. The intention behind a DTAA is to aid in enhancing trade. As the tax element is an important consideration for a businessman, he would always weigh his post-tax return on investments. In order to attract more trade, which generates more employment, which in turn raises the disposable income and increases the purchasing power, giving a general boost to the economy, countries are willing to forsake a certain percentage of collection in revenues.

As the problems faced by most countries would be largely similar, a need was felt to standardize the DTAAs. As early as in the 1920s, the International Chamber of Commerce sought the help of the League of Nations to overcome the problem of double taxation. The need to standardize DTAAs was felt to reconcile the laws and needs of different countries while preserving their individuality. A standardized DTAA would also help the persons dealing in trade with different countries at the same time.

[*] "Resident of a Contracting State" means any person who, under the laws of that State, is liable to tax therein by reason of his domicile, residence, place of management or any other criterion of a similar nature, and also includes that State and any political subdivision or local authority thereof. This term, however, does not include any person who is liable to tax in that State in respect only of income from sources in that State or capital situated therein.

Model form of the Convention was first prepared by the Fiscal Committee of the League of Nations in 1927. Later the Committee conducted meetings in Mexico during 1943 and in London in 1946 to discuss the drafts and proposed minor variations. The Model Convention was published in 1946 by the Fiscal Committee of the United Nations (UN) Social and Economic Council. These drafts were the starting point by Organization for Economic Cooperation and Development (OECD) for its draft model DTAA.

In 1963 OECD released its draft model DTAA, which is called the Model Convention. It was following the publication of this draft that rapid development took place in the development of an international treaty network. This resulted in the publication in 1977 of a new Model Convention and Commentaries, 1977 by which time there was already a well advanced treaty network among the members. A need was felt to update and adapt the Model Convention of 1977 considering the fundamental changes taking place in the ways in which cross borders transactions were undertaken. This lead to publication of the 1992 Model Convention in a loose leaf format. Unlike the 1963 Draft Convention and the 1977 Model Convention, the revised Model was not the culmination of a comprehensive revision, but rather the first step of an ongoing revision process intended to produce periodic updates and thereby ensure that the Model Convention continues to reflect accurately the views of Member countries at any point in time. In the later updates, produced in 1977, the positions of a number of non-Member countries on the Model Convention were also added. The OECD now periodically updates the Model Commentary. It has also published separate publications e.g., 'Attribution of Profits to Permanent Establishment (PE)', 'Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations (Existing TPG)'.

14.Model Double Taxation Avoidance Agreements (DTAAs)

There are basically four different Models of Agreement/ Treaty which have been developed based on the needs and usage for different countries in relation to tax matters. The Models ensure a uniform approach for countries to enter into conventions with other countries. The Models are quite exhaustive in nature and cover almost all aspects relevant to cover the tax laws.

The common Models followed are as under:

a. OECD Model:

The emergence of present form of OECD Model Convention can be traced back to 1927, when the Fiscal Committee of the League of Nations prepared the first draft of Model

Form applicable to all countries. In 1946 the model convention was published in Geneva by the Fiscal Committee of U.N. Social & Economic Council and later by the Organisation for European Economic Co-operation (OEEC) in 1963. However, in 1961, the Organisation for Economic Co-operation and Development (OECD) was established, with developed countries as its members, to succeed the OEEC, and OECD approved the draft presented to the OEEC. In 1977, the final draft was prepared in the present form which has been revised several times; the latest being in the year 2017.

OECD Model Convention (OECD MC) is essentially a model treaty **between two developed nations.** This model advocates the residence based taxation, i.e., it lays emphasis on the right of state of residence to tax the income.

The OECD model is generally regarded as favouring developed countries as it gives priority of taxation to the residence state over that of the state of source. OECD Model is the base on which other Models are built. It has also been used as a Model for negotiating Treaties between OECD Members and non-member countries. *This method reduces Double Taxation through the exemption system.*

b. UN Model:

In 1968, the United Nations set up an Adhoc Group of Experts from various developed and developing countries to prepare a draft model convention between developed and developing countries. In 1980, this Group finalised the UN Model Convention (UN MC) in its present form. It has further been revised a number of times, the latest being in the year 2017.

The UN MC is a compromise between the source principle and the residence principle. However, it gives more weight to the source principle as against the residence principle of the OECD MC. UN MC is designed to encourage flow of investments from the developed countries to developing countries. It takes into account sharing of tax-revenue with the country providing capital.

The United Nations MC seeks to be balanced in its approach. As a corollary to the principle of taxation at source, the Articles of the Convention are based on a recognition by the source country that

(a) taxation of income from foreign capital should take into account expenses

allocable to the earnings of the income so that such income is taxed on a net basis,

(b) taxation should not be so high as to discourage investment and

(c) it should take into account the appropriateness of the sharing of revenue with the country providing the capital.

In addition, the United Nations MC embodies the idea that it would be appropriate for the residence country to extend a measure of relief from double taxation through either a foreign tax credit or an exemption, as is also the case with the OECD Model Convention.

Since the OECD Model was regarded as furthering the interests of the developed countries, therefore, the developing countries prepared their own model in 1979, which is known as the 1979 UN model. This was developed/ modified in 1980 and further revised in 1999. This was adopted by the UN and made available to the public in 2001. It is therefore known as the UN Model Convention 2001. As the OECD model was the source, both the drafts are largely similar.

The UN Model is a compromise between the source rule and the residence rule but it gives more weight to the source rule. It is suitable for drawing up tax treaties between developed and developing countries. The UN Model also tries to ensure removal of discrimination between taxpayers in the international field. *In this method, Double Taxation is reduced either through foreign tax credit or by way of exemption.* Most of the agreements entered into by India are based on a combination of the OECD Model and the UN Model. Emphasis is laid more on "source" country taxation which is consistent with the objective and rationale of the UN Model. Suitable modifications are made to reflect the Indian Domestic Law and the laws of the countries with whom the agreement is entered into.

c. US Model: US Model serves as a model to negotiate Treaty with US. It is also based on OECD Model. It adapts to the conditions peculiar to the US. The US Model was first published in 1976 and revised in 1977, 1981 and 1996. US have also published Technical Explanation to explain /clarify the provisions in the Articles of the US Model. In most of the Articles it looks into the benefits and taxation in US.

d. ANDEAN Model: Andean Model was developed in 1971 for the purpose of DTAAs that may be entered into by underdeveloped countries, especially, Latin American countries. This Model is adopted by the Member states of Andean Group namely, Chile, Ecuador, Columbia,

Peru and Venezuela. The Model primarily follows the source rule of taxation and accordingly, royalty, interest, dividend and income from mineral natural resources are taxed in the source country.

These DTAA Models have led to the development of international tax law besides harmonization of DTAAs at the time of negotiation of the DTAAs and also at the time of interpretation of DTAAs in the event of dispute. The thumb rule to be followed in the interpretation of a DTAA is that the provisions of the DTAA override the Act and the words and provisions of the DTAA must be given the meaning assigned to them in the DTAA. DTAAs not being different from other international agreements, they will be interpreted using the same principles accepted in International law. Therefore, the principles set out in the Vienna Convention on 23rd May, 1969 will be applicable in interpreting DTAAs in the case of conflict.

For further reading please refer to:

- Paper 6C: International Taxation, Final Course, ICAI (https://www.icai.org/post.html?post_id=14458)
- Paper-16: Direct Tax Laws and International Taxation, Final Study Material, ICAI (https://icmai.in/upload/Students/Syllabus2016/Final/Paper-16-Jan2020-Revised.pdf)