

CA GAURAV JAIN SFM CLASSES

STRATEGIC FINANCIAL MANAGEMENT (SFM)

FOREX & OTC Derivatives Summary

By CA GAURAV JAIN

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With Live Trading Session**

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Aakash Gupta
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Shubham Bansal
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Shishir Agarwal
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Rahul Kanojia
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Ayush Rustagi
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Vikalp Agarwal
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Vaishali Gupta
Roll No. 125020
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Arpit Singh Chaudhary
Roll No. 109538
Scoring **75** Marks in SFM



Saurabh Goswami
Roll No. 131998
Scoring **74** Marks in SFM



Navdeep Rastogi
Roll No. 138706
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Saurabh Gupta
Roll No. 147915
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Rohit Goel
Roll No. 119653
Scoring **73** Marks in SFM



Lokesh Garg
Roll No. 197464
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Jyoti Goyal
Roll No. 197967
Scoring **73** Marks in SFM



Suraj kumar
Roll No. 127638
Scoring **72** Marks in SFM



Tarun Gulati
Roll No. 208542
Scoring **70** Marks in SFM



Rahul Talwar
Roll No. 134011
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Nitin Kumar
Roll No. 130158
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Aakriti Jain
Roll No. 133732
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Saurav Pandit
Roll No. 107206
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Prachi Singh
Roll No. 197694
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Aditya Wadhwa
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Dheeraj Sharma
Roll No. 139999
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Bhuvan Grover
Roll No. 208068
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Rajneesh Verma
Roll No. 193208
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Divyansh Jain
Roll No. 168563
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Anjali Asha Jain
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Rashika Jain
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Sejal Goel
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Anushk Kapoor
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Deepak Singh
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Heena Mohla
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Aradhana Shankar
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Akshay Uppal
Roll No. 428868
Scoring 65 Marks in SFM



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Roll No. 418602
Scoring 63 Marks in SFM



Ankit Kumar
Roll No. 435237
Scoring 63 Marks in SFM



Nishant Grover
Roll No. 435237
Scoring 63 Marks in SFM



Manish Wahi
Roll No. 435129
Scoring 63 Marks in SFM



Madhvi Agarwal
Roll No. 426999
Scoring 61 Marks in SFM



Anurag Sehgal
Roll No. 496997
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Parth Agarwal
Roll No. 461046
Scoring 60 Marks in SFM



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Roll No. 439463
Scoring 60 Marks in SFM



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Roll No. 118704
Scoring 81 Marks in SFM



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Roll No. 126053
Scoring 77 Marks in SFM



Vipul Kohli
Roll No. 119771
Scoring 76 Marks in SFM



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Roll No. 119279
Scoring 75 Marks in SFM



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Scoring 73 Marks in SFM



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Roll No. 146242
Scoring 73 Marks in SFM



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Roll No. 127328
Scoring 72 Marks in SFM



Divya Goel
Roll No. 137548
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Bikash Thakur
Roll No. 129993
Scoring 72 Marks in SFM



Abhilasha Gupta
Roll No. 127225
Scoring 72 Marks in SFM



Preeti Gupta
Roll No. 126156
Scoring 70 Marks in SFM



Anish Munjal
Roll No. 121546
Scoring 70 Marks in SFM



Mudit Goel
Roll No. 121971
Scoring 70 Marks in SFM



Naman Jain
Roll No. 123182
Scoring 70 Marks in SFM



Shweta Banger
Roll No. 129045
Scoring 69 Marks in SFM



Asif
Roll No. 129843
Scoring 69 Marks in SFM



Ayushi Agarwal
Roll No. 133383
Scoring 69 Marks in SFM



Nitin Singhal
Roll No. 173541
Scoring 68 Marks in SFM



Kapil Manchanda
Roll No. 181915
Scoring 68 Marks in SFM



Arvind Kuliyal
Roll No. 132719
Scoring 68 Marks in SFM



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Roll No. 123917
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Roll No. 115218
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Roll No. 121439
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Ayushi Jain
Roll No. 128489
Scoring 67 Marks in SFM



Ankur Raheja
Roll No. 125912
Scoring 67 Marks in SFM



Markeshshir Matenja
Roll No. 118975
Scoring 66 Marks in SFM



Alisha Aggarwal
Roll No. 128822
Scoring 65 Marks in SFM



Pooja Gupta
Roll No. 129143
Scoring 64 Marks in SFM



Tarun Mehrotra
Roll No. 129180
Scoring 64 Marks in SFM



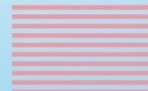
Anand Kankani
Roll No. 129791
Scoring 63 Marks in SFM



Ratan Bhaduria
Roll No. 128331
Scoring 63 Marks in SFM



Rohit Rathi
Roll No. 128331
Scoring 62 Marks in SFM



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CA GAURAV JAIN SFM CLASSES**Comparison between CA FINAL SFM Old & New Course****No. of Amendment Classes required for transition between Old & new Course = 13****[10 Classes for Practical Topics & 3 Classes for Theory]**

Chapters Sr. No.	Name as per New course	COMMENT	No. of amendment classes required
1	Financial Policy & Corporate strategy	Same as per old course	
2	Indian Financial System*	Theory Chapter	
3	Risk Management*	Theory + Simple Calculation of VAR	2
4	Security Analysis	Same as per old course Some topic transfer from Portfolio theory	1
5	Security Valuation	Already covered in old course in the name of Bond Valuation + Equity/Business Valuation New Topic Enterprise Value introduced	1
6	Portfolio Management	Same as per old syllabus New Topic 1) Fixed Income Portfolio Management 2) Alternative Investment Strategies	2
7	Securitization	Theory Chapter	
8	Mutual Funds	Same as per old syllabus	
9	Derivatives Analysis & Valuation	Same as per old syllabus	
10	Foreign Exchange exposure & Risk Management	Same as per old syllabus	
11	International Financial Management	Same as per old syllabus (International Capital Budgeting)	2
12	Interest Rate Risk Management	Same as per old syllabus (1 or 2 additions)	1
13	Corporate Valuation	Same as per old syllabus (2 Topics Added)	1
14	Merger, Acquisition & Corporate Restructuring	Same as per old syllabus	
15	International Financial Centre(IFC)*	Theory Chapter	
16	Startup Finance*	Theory Chapter	
17	Small & Medium Enterprises*	Theory Chapter	

* New Chapters introduced

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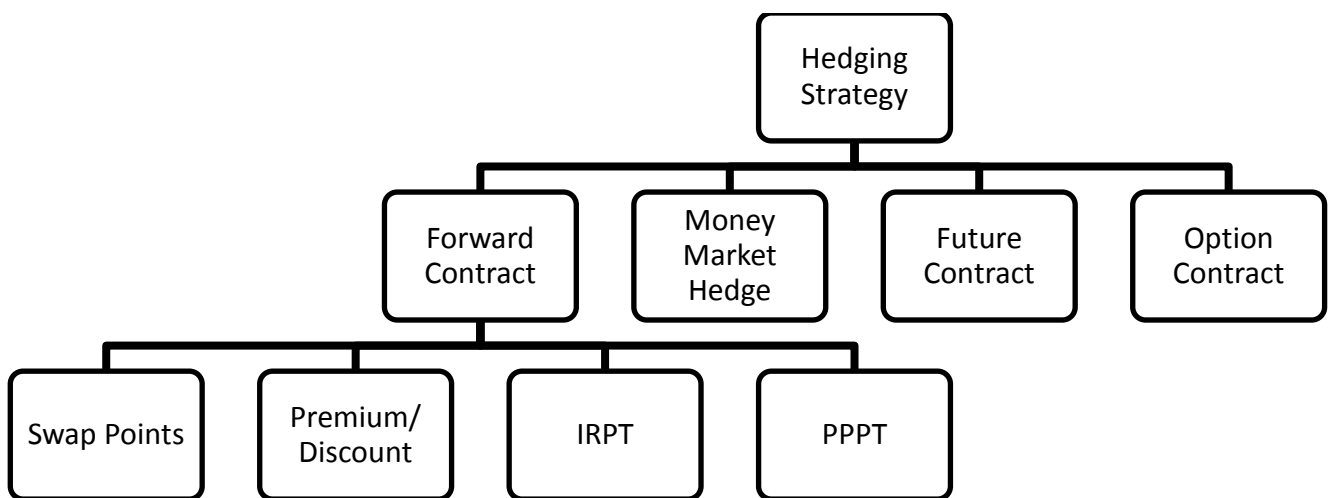
FOREIGN EXCHANGE RISK MANAGEMENT (FOREX) + OTC Derivative

Concept No. 1: Introduction

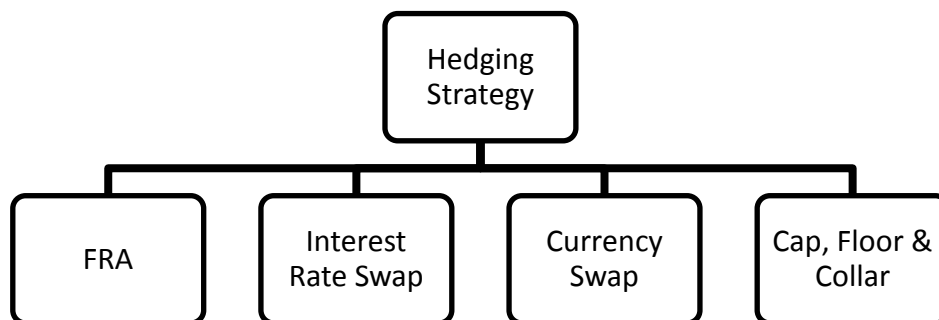
Three types of transactions in FOREX market which associates two types of risks:

1. Loans(ECB)
2. Investments (Bonds & Equity)
3. Export & Import

Foreign Exchange Risk



Interest Rate Risk



What is Exchange Rate?

The rate of conversion is the Exchange Rate.

Or

An exchange rate is the price of one country's currency expressed in terms of the currency of another country. E.g. A rate of ₹ 50 per US \$ implies that one US \$ costs ₹ 50.

Rule 1: in an exchange rate two currencies are involved.

Rule 2: in any transaction involving Foreign Currency, you are selling one currency and buying another.

Concept No. 2: Home Currency & Foreign Currency

Home Currency: Country's own currency.

For India '₹'/INR is home currency

For USA 'US \$' or 'Dollar' is a home currency

Foreign Currency: Any currency other than home currency will be a Foreign Currency

For India, \$, £, etc. will be a foreign currency.

For US '₹', £ will be foreign currency.

Concept No. 3: Bid & Ask Rate

Bid Rate: Rate at which bank **BUYS** left hand side currency.

Ask Rate: Rate at which bank **SELLS** left hand side currency.

One-way Quote: [when Bid and Ask Rate are same]

Example:

1\$ = ₹ 65

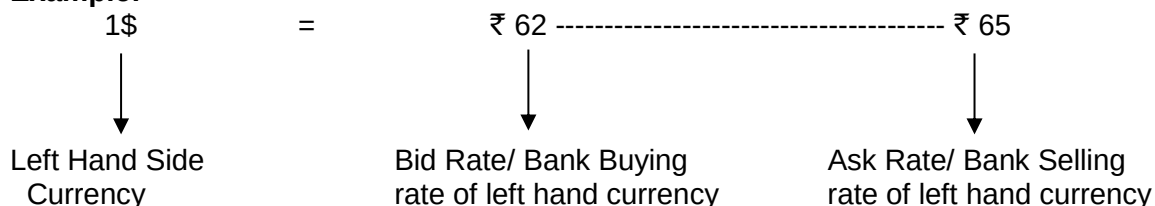
Explanation:

Bank buys 1\$ at ₹ 65.

Bank sells 1\$ at ₹ 65.

Two-way Quote: [when Bid and Ask Rate are separately given]

Example:



Note:

- Difference between Bid & Ask rate represents Profit Margin for the bank.
- Quotation/ Bid & Ask rate or Exchange Rate is always quoted from the point of view of bank.
- Bid Rate must always be less than Ask Rate.

Or

Ask Rate must always be greater than Bid Rate.

- Always solve question from the point of view of investor/ Customer unless otherwise stated.
- The difference between the Ask & Bid rates is called *Spread*, representing the profit margin of dealer.

$$\text{Spread} = \text{Ask Rate} - \text{Bid Rate}$$

Concept No. 4: Direct Quote & Indirect Quote

Direct Quote: Home Currency Price for 1 unit of foreign currency.

Example: 1\$ = ₹ 65 is DQ for Rupee.

Indirect Quote: Foreign Currency Price for 1 unit of Home Currency.

Example: 1 Re = 0.01538 \$ is IDQ for Rupee.

Note:

- ❖ If a given quotation is direct for one country, then the same quotation will be indirect for another country and vice-versa.

Concept No. 5: Conversion of Direct Quote into Indirect Quote and vice-versa

Case 1: One-way Quote [When bid & ask rates are same]

- Direct Quote can be converted into indirect quote by taking the reciprocal of direct quote.

$$IDQ = \frac{1}{DQ}$$

Case 2: Two-way Quote [When bid & ask rates are separately given]

- Direct Quote (DQ) can be converted into Indirect Quote (IDQ) by taking the reciprocal of direct quote and switching the position.

Example: \$1 = ₹ 47.25 --- ₹ 47.85 (1st Quote)

Convert DQ into the IDQ.

Solution:

DQ => \$1 = ₹ 47.25 --- ₹ 47.85

IDQ => 1 Re. = $\frac{1}{47.25}$ - $\frac{1}{47.85}$

$$1 \text{ Re.} = \frac{1}{47.85} - \frac{1}{47.25}$$

OR 1 Re. = 0.02090 --- 0.02116

(2nd Quote)

Conversion Rules :

1. Which currency is given in the question, we need that currency in the LHS of the quote.
2. Decide whether to Buy that currency or Sell.
3. If you Buy → Bank Sells → Use Ask R
If you Sell → Bank Buys → Use Bid Rate
4. Always Solve question from the point of view of Customer.

Concept No. 6: Spot Rate & Forward Rate

Spot Rate: Rate used for buying & selling of foreign currency at 'As on Today or Immediately'

Forward rate: Rate used for buying & selling of foreign currency at some future Date i.e. Forward rate is the rate contracted today for exchange of currencies at a specified future date.

Concept No. 7: Premium or Discount

Premium: If the currency is costly or Expensive in future as compared to spot it is said to be at a premium.

$$SR \Rightarrow 1\$ = ₹ 45$$

$$FR \Rightarrow 1\$ = ₹ 50$$

In the above quote \$ is at Premium.

Discount: If the currency is Cheaper in future as compared to spot it is said to be at a discount.

$$SR \Rightarrow 1\text{Re.} = \frac{1}{45} \$ = 0.0222$$

$$FR \Rightarrow 1\text{Re.} = \frac{1}{50} \$ = 0.02$$

We can say that rupee is at discount.

Calculation of Premium or Discount of left hand side Currency

$$\left[\frac{FR - SR}{SR} \right] \times \frac{12}{\text{Forward Period}} \times 100$$

Note: This formula is applicable only for left hand currency

Conclusion:

If one currency is at a premium, then another currency must be at a discount. However, the rate of premium may not be equal to the rate of discount.

On account of base effect, premium is slightly higher than the discount.

Concept No. 8 : Calculation of Forward Rate when Spot Rate & Premium or Discount is given**Example 1:**

$$SR \rightarrow 1\$ = ₹ 48.50$$

\$ is at premium = 5%

Calculate FR?

Solution:

$$FR \rightarrow 1\$ = ₹ 48.50 (1 + 0.05)$$

$$1\$ = ₹ 50.925$$

Concept No. 9 : SWAP POINTS/ Forward Margin/ Forward-Spot Differential

Difference between Forward Rate and Spot Rate is known as **Swap Points**.

FR (-) SR	SR (-) FR	FR (-) FR
<u>Swap Points</u>	<u>Swap Points</u>	<u>Swap Points</u>

How to ADD or DEDUCT Swap Points

- ❖ Swap Point should be **Added or Deducted** from the last decimal point in the **Reverse Order**.
- **Premium → Add Swap Points**
- **Discount → Less Swap Points**

- **If Premium / Discount is not mentioned, we observe the following rules:**

Case 1: When Swap Points are in increasing order:

- It indicates premium on left hand currency.
- In this case, we will **add swap points** with spot rates to calculate forward rates.

Case 2: When Swap Points are in decreasing order:

- It indicates discount on left hand currency.
- In this case, we will **deduct swap points** from Spot Rate to calculate forward rates.

Note Don't apply the rule if Premium or Discount is used in the question.

Concept No. 10: Cross Rate

Cross Rate between any two currencies is derived with the help of quotations between these currencies & third currency.

- ❖ Cross Rate is normally used in finding out any missing exchange rate.
- ❖ The calculation of cross rate simply requires you to focus on cancellation of common currencies, to do so you have to multiply with DQ & IDQ.
- ❖ Always check ASK Rate > BID Rate.

Concept No. 11: Squaring-up the position or Covering the Position or Closing-out the Position under FOREX

- Covering the Position means taking an opposite or reverse position to calculate profit and loss i.e. we cover our position to book Profit or Loss.



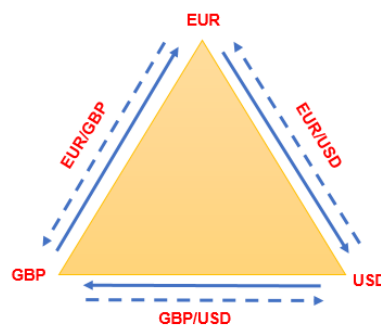
Concept No. 12: Exchange Margin

Exchange Margin is the extra amount or percentage charged by the bank over and above the rate quoted by it. Eg. Commission, transaction charges, etc.

Actual Selling Rate of Bank: (Add Exchange Margin)
= Ask Rate (1+ Exchange Margin)

Actual Buying Rate of Bank: (Deduct Exchange Margin)
= Bid Rate (1 – Exchange Margin)

Concept No. 13: Triangular Arbitrage



It involves 3 currencies represented by 3 corner points of triangle. We will be starting with one currency, pass through the other two currencies and come back to the original currency. There are two paths → clockwise and Anticlockwise
One path will result in profit while the other path will result in Loss.

Concept No. 14: Purchasing Power Parity Theory (PPPT)**Calculation of Spot Rate**

- PPPT is based on the concept of 'Law of One Price'.
- PPPT is based on the fact that price of a commodity in two different market will always be same.
- If Price of a commodity in two different market are not same, there will be an arbitrage opportunity exists in the market.
- Suppose Price of a Commodity in India is ₹ X & In USA is \$Y. Spot Rate is 1\$ = ₹ SR
Then $X = Y \times SR$

$$SR = \frac{X}{Y}$$

$$\text{Spot Rate (₹ / \$)} = \frac{\text{Current Price (Rs.)}}{\text{Current Price (\$)}}$$

- Exchange Rate = Price Ratio

Calculation of Forward Rate

- PPPT is also applicable in case of inflation. Suppose Inflation Rate of India is I_{Rs} and in US is $I_{\$}$
Forward Rate 1\$ = ₹ F. Now as per PPPT, we have after 1 year:

$$X(1 + I_{Rs}) = Y(1 + I_{\$}) \times FR$$

$$FR = \frac{X(1 + I_{Rs})}{Y(1 + I_{\$})}$$

$$FR = SR \times \frac{1 + I_{Rs}}{1 + I_{\$}}$$

$$\frac{FR (\text{Rs./\$})}{SR (\text{Rs./\$})} = \frac{1 + \text{Rupee Inflation}}{1 + \text{Dollar (\$) Inflation}}$$

Note:

- ❖ The above equation is applicable for any two given currency.
- ❖ **Determination of Premium or Discount with the help of Inflation Rate:** If Inflation Rate of a country is higher, then the currency of that Country will be at a discount in future and Vice- Versa.

Inflation rate in above equation must be adjusted according to forward period.

Case1: When Period is less than 1 Year.	Case2: When Period is more than 1 Year.
$\frac{FR (\text{Rs./\$})}{SR (\text{Rs./\$})} = \frac{1 + \text{Periodic Inflation Rate (Rs.)}}{1 + \text{Periodic Inflation Rate (\$)}}$	$\frac{FR (\text{Rs./\$})}{SR (\text{Rs./\$})} = \frac{(1 + \text{Inflation Rate (Rs.)})^n}{(1 + \text{Inflation Rate (\$)})^n}$

Concept No. 15: Interest Rate Parity Theory (IRPT)

IRPT states that exchange rate between currencies are directly affected by their Interest Rate.

Assumption: Investment opportunity in any two different market will always be same.

Formulae:

$$\frac{FR (\text{Rs./\$})}{SR (\text{Rs./\$})} = \frac{1 + \text{Interest Rate (Rs.)}}{1 + \text{Interest Rate (\$)}}$$

Note:

The above equation is applicable for any two given currency.

Interest Rate should be adjusted according to forward period.

- ❖ **Determination of Premium or Discount with the help of Interest Rate:** If Interest rate of a country is higher, than the currency of that country will be at a discount in future and vice-versa.
- ❖ If IRPT holds, arbitrage is not possible. In that case, it doesn't matter whether you invest in domestic country or foreign country, your rate of return will be same.

Concept No. 16: Covered Interest Arbitrage

Type 1	Type 2
When Bid and Ask rates are same.	If Bid & Ask rates are given separately.
When Investment & Borrowing rates are same in one country.	Investment & Borrowing rate of a given currency is separately given.
# (Short – cut is available)	# (Hit & Trial method is used)

- When Investment opportunity in any two given countries are different, covered Interest Arbitrage is possible.
- When IRPT is not applicable, then covered interest arbitrage will be applicable.
- The rule is to “ **Borrow from one country & Invest in another Country** ”.
- Suppose Interest Rate of India is $INT_{\text{₹}}$ And USA is $INT_{\$}$. Spot Rate is $1\$ = ₹ \text{SR}$, Forward Rate $\Rightarrow 1\$ = ₹ \text{FR}$

Let assume Investor is having ₹ A for investment

Option 1: When investor invest ₹ A in India:
Amount of ₹ Received after one year

$$A_1 = A (1 + INT_{\text{₹}})$$

Option 2: When investor invest ₹ A in USA:

Amount of Equivalent ₹ Received after one year

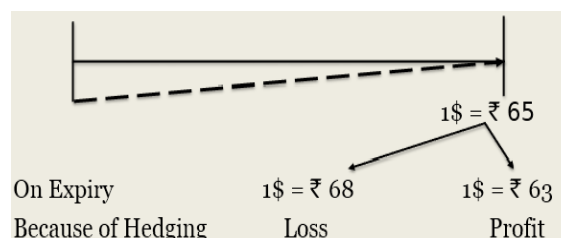
$$A_2 = \left[\frac{A}{\text{SR}} \$ (1 + INT_{\$}) \right] \times \text{FR}$$

IF $A_1 = A_2$	IF $A_1 > A_2$	IF $A_1 < A_2$
No arbitrage opportunity.	- Arbitrage Opportunity is Possible. - Arbitrager should invest in India (Home Country) & borrow from USA (Foreign Country)	- Arbitrage opportunity is possible. - Arbitrager should invest in USA (Foreign Country) & borrow from India (Home Country)

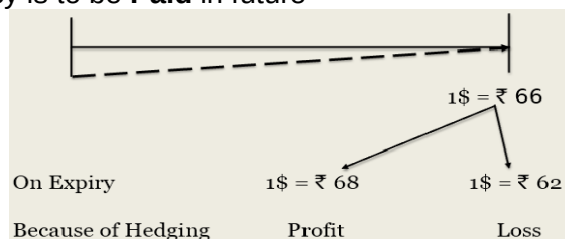
Note: If in 1st try we have arbitrage profit, then no need to solve 2nd case.
If in 1st try we have arbitrage loss, then 2nd case must be solved.

Concept No. 17: Forward Contract

- Transaction exposure arises when a firm has a known amount of foreign currency payable or receivable but home currency equivalent of which is unknown.
- Hedging is defined as an activity converted uncertainty into certainty. The simplest hedging strategy is hedging through forward contract.
- In case of foreign currency is to be **received** in future

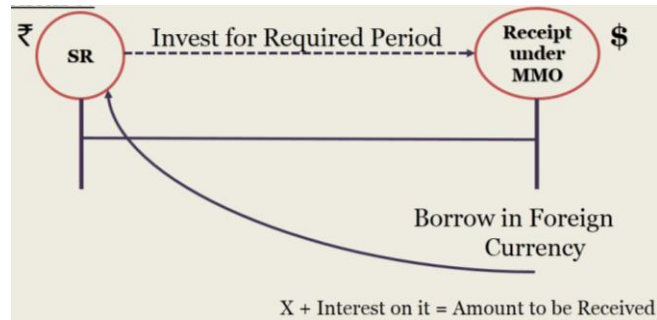


- In case of foreign currency is to be **Paid** in future



Concept No. 18: Money Market Operations

Case 1 : If Foreign Currency is to be received in future:



Step 1: Borrow in Foreign Currency:

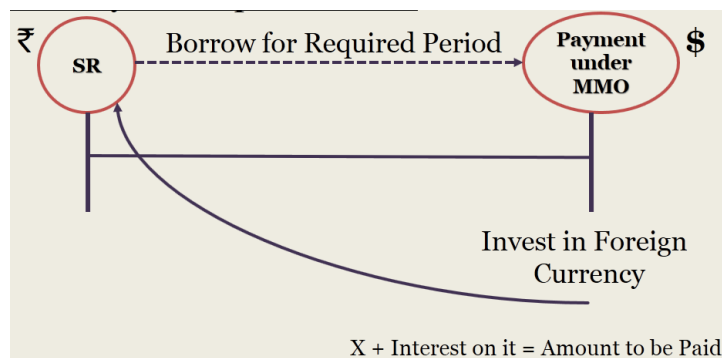
Amount of borrowing should be such that Amount Borrowed + Interest on it becomes equal to the amount to be received.

Step 2: Convert the borrowed foreign currency into home currency by using spot Rate.

Step 3: Invest this home currency amount for the required period.

Step 4: Pay the borrowed amount of foreign currency with interest using the amount to be received in foreign currency. [May be Ignored]

Case 2: Money Market Operation:- When foreign currency is to be paid in future



Step 1: Invest in Foreign currency.

Amount of investment should be such that, "Amount Invested + Interest on it" becomes equal to amount to be paid

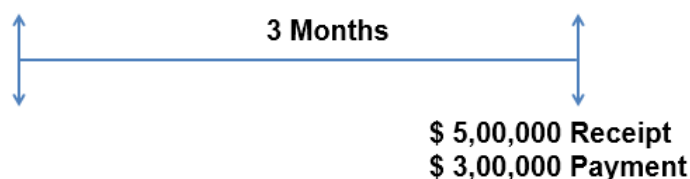
Step 2: Borrow in Home Currency, equivalent amount which is to be invested in foreign currency using Spot rate.

Step 3: Pay the borrowed amount with interest in Home Currency on Maturity.

Step 4: Pay the outstanding amount with the amount received from investment. [May be ignored]

Concept No. 19: Exposure Netting

Netting means adjusting receivable and payables (or inflows & Outflows)



Two conditions must be fulfilled:

1. Netting can be done for same currency.
2. Netting can be done for same period.

Note: In case of Netting, No. of forward contracts can be reduced.

Concept No. 20: Adjusting Exchange rate quotation when exchange margin is attached to it

Example:

1 Euro = £ 1.7846 ± 0.0004

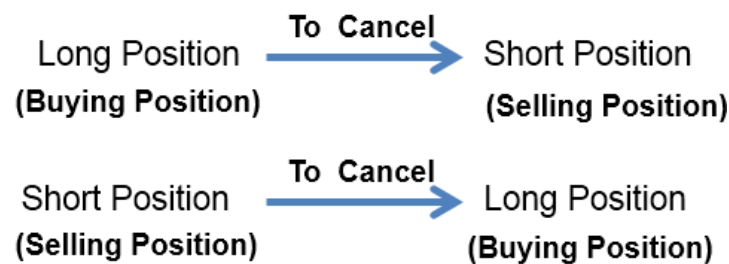
Solution:

1 Euro = £ 1.7842 ---- 1.7850

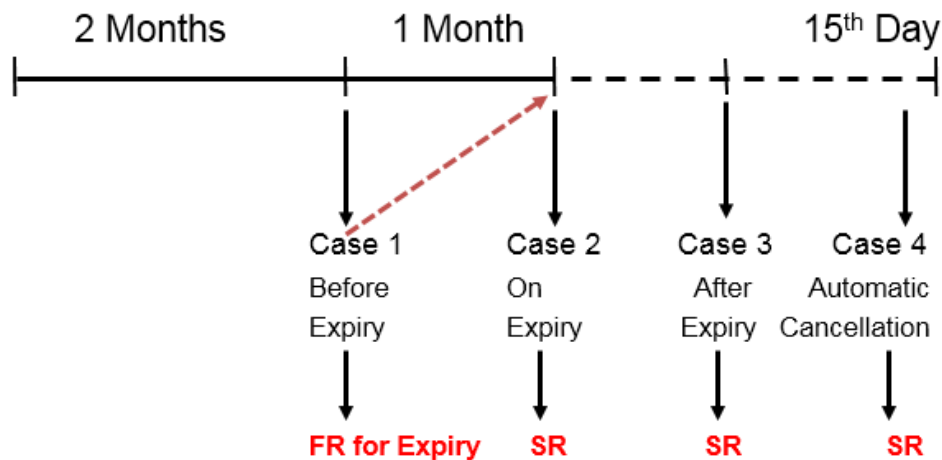
Concept No. 21: Modification under Forward Contract

How to cancel Forward Contract

- Forward Contracts must be cancelled by entering into a reverse contract.

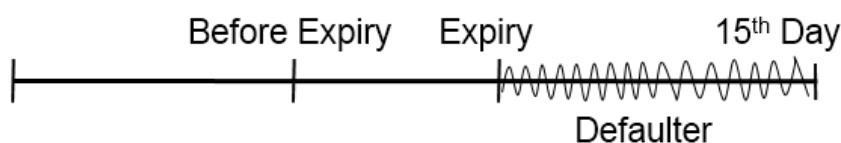


Rate at which contract needs to be Cancelled



a) Cancelled before due date:	Forward Rate prevailing as on today for due date.
b) Cancelled on due date:	Spot Rate of Due Date.
c) Cancelled after Due Date:	Spot Rate of the date when customer contracted with the bank.
d) Automatic Cancellation:	Spot Rate prevailing on 15 th day i.e. when grace period ends.

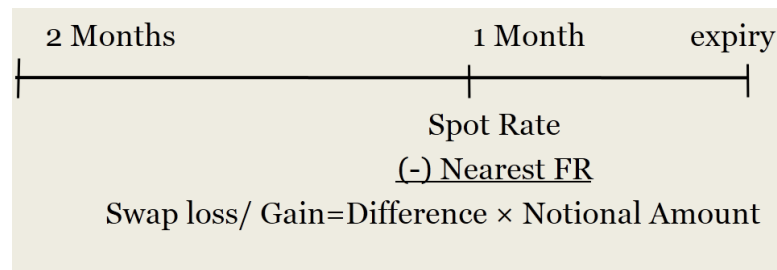
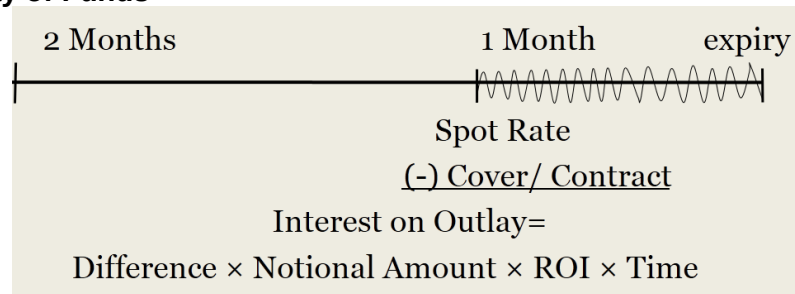
Settlement of Profit/Loss:



a) Cancel on or before due date	Customer will be eligible for both profit/Loss.
b) Cancel after due date or Automatic Cancellation	Customer will be eligible only for Loss

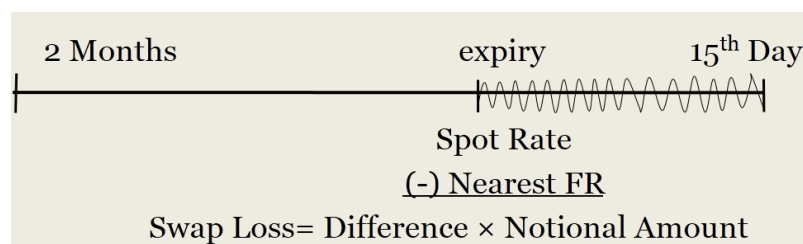
Concept No. 22: Extension of Forward Contract**Step 1:** Cancellation of original Contract**Step 2:** Entering into a new forward contract for the extended period.**Early Delivery**

The bank may accept the request of customer of delivery at the before due date of forward contract provided the customer is ready to bear the loss if any that may accrue to the bank as a result of this. In addition to some prescribed fixed charges bank may also charge additional charges comprising of:

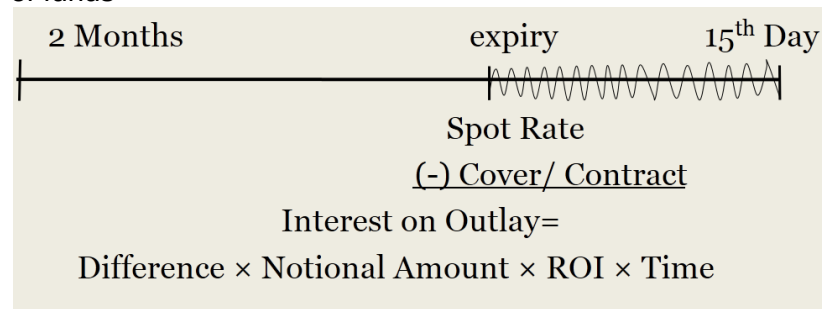
a) Swap Difference**b) Interest on Outlay of Funds****Cancellation after Due Date/ Automatic Cancellation Late Delivery / Extension after due date**

In these cases the following cancellation charges may be payable:

1. Exchange Difference
2. Swap Loss



3. Interest on outlay of funds



Concept No. 23: Foreign Capital Budgeting

Two approaches are followed in case investment is undertaken in foreign country:

1. Home Currency Approach
2. Foreign Currency Approach

Home Currency Approach:

Step 1: Compute all cash inflows & outflows arising in foreign currency.

Step 2: Convert these cash Inflows & outflows into home currency by using appropriate exchange rates (i.e. Forward Rate) (Calculate through Swap Point or IRPT)

Step 3: Compute a suitable discount rate.

Step 4: Compute Home Currency (NPV)

Foreign Currency Approach:

Step 1: Compute all cash inflows & outflows arising in foreign currency.

Step 2: Compute a suitable discount rate (RADR).

Step 3: Compute Foreign Currency (NPV)

Step 4: Convert foreign currency NPV into Home currency by using Spot Rate

Note:

- ❖ Answer by both approach will be same.
- ❖ Discount Rate to be used should be risk-adjusted discount rate (RADR), Since foreign project involves risk.

$$(1 + \text{RADR}) = (1 + \text{Risk-free rate}) (1 + \text{Risk Premium})$$

- ❖ Discount Rate or RADR of both the country are different.
- ❖ Risk Premium of both home country and foreign country are assumed to be same.

Concept No. 24: Centralized Cash Management & Decentralized Cash Management System

- Under **Decentralized Cash Management**, every branch is viewed as separate undertaking. Cash Surplus and Cash Deficit of each branch should not be adjusted.
- Under **Centralized Cash Management**, every branch cash position is managed by single centralized authority. Hence, Cash Surplus and Cash Deficit of each branch with each other is accordingly adjusted

Concept No. 25: Contribution to Sales Ratio based decision under FOREX

$$\text{Contribution to Sales Ratio} = \frac{\text{Contribution (Sales-VC)}}{\text{Sales}} \times 100$$

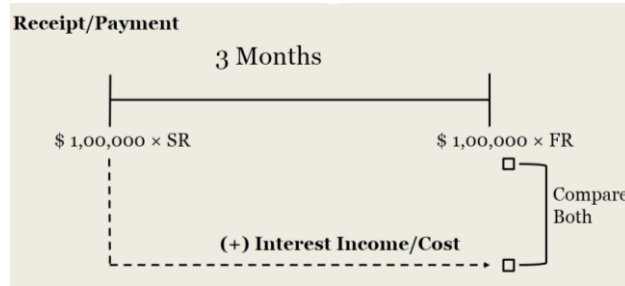
Decision:

Higher the C/S Ratio, Better the position.

Concept No. 26: Leading & Lagging

- **Leading** means advancing the timing of payments and receipts.
- **Lagging** means postponing or delaying the timing of payments and receipts.

Note: While deciding regarding leading and lagging, we must consider “Opportunity cost of interest” if given in question.

**Concept No. 27: Currency Pairs**

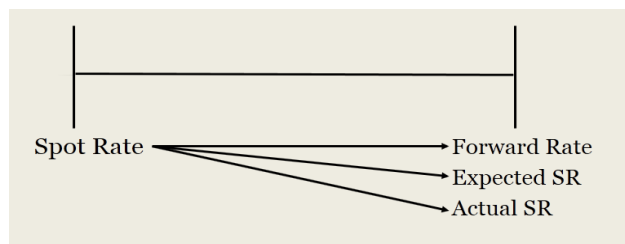
- Currency Pairs are written by ISO Currency codes of the base currency and the counter currency, separating them with a slash character.

Example:



Example:

A price quote of EUR/USD at 1.30851 means
1 Euro = 1.30851 \$

Concept No. 28: Gain/Loss under FOREX**Concept No. 29: Evaluation of Quotation from two Banks**

- When quotations are received from two banks, customer should select that quotation which is more beneficial to him.

Example:

Sell

HDFC Bank 1£ = \$ 1.9650 — \$ 1.9670

Axis Bank 1£ = \$ 1.9550 — \$ 1.9560 **Buy**

- Buy 1 £ = \$ 1.9560 (HDFC)
- Sell 1 £ = \$ 1.9650 (ICICI)

Concept No. 30: Expected Spot Rate

$$\text{Spot Rates} \times \text{Probability} = \text{Expected Spot Rate}$$

Concept No. 31: Currency Futures

Steps Involved:

Step1: Decide Position

- Long Position
- Short Position

Note: First we will decide which currency will buy or which currency we will sell then check the currency on the LHS of the quotation & then accordingly decide Long Position & Short Position



Step 2 : Calculation of Number of contracts/Lots

$$\text{No. of Lots} = \frac{\text{Value of Position}}{\text{Value of one Contract}} = \frac{\$}{\$} = \cancel{\frac{\$}{£}}$$

Note: Convert exposure amount in the same currency as of Lot Size/Contract Size & it will be converted at **CONTRACT RATE**.

Step 3: Calculate Settlement Amount/ Total Outflow/Inflow under Future Contract

1. Calculate Profit and Loss under Future Contract



$$\text{Change in Future Price} \times \text{No. of Lots} \times \text{Value of One Contract}$$

2. Calculate Total Receipt/Total Payment using SR on Expiry



3. Calculation of opportunity cost of initial margin if Given

Total Outflow / Inflow under Future Hedging

Concept No. 32: Currency Options

Steps Involved:

Step1: Decide Position

- Long Call
- Long Put

~~Short Call~~
~~Short Put~~

Note: First we will decide which currency will buy or which currency we will sell then check the currency on the LHS of the quotation & then accordingly decide Long Call & Long Put

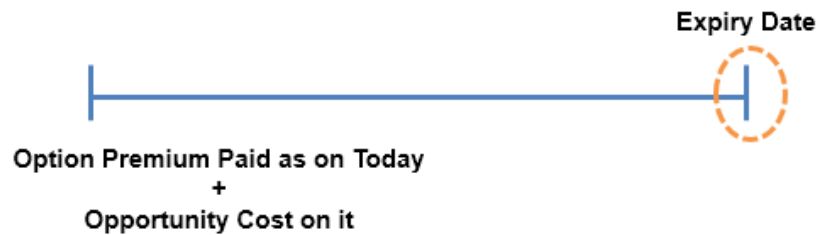


Step2 : Calculation of Number of contracts/Lots

$$\text{No. of Lots} = \frac{\text{Value of Position}}{\text{Value of one Contract}} = \frac{\$}{\$} = 17.35 \text{ or } 17 \text{ lots}$$

Note: Convert exposure amount in the same currency as of Lot Size/Contract Size & it will be converted at CONTRACT RATE.

Step 3: Now the UNHEDGE POSITION should be hedge through forward market as there is no lot size requirement under forward market.

Step 4: Calculation of Option Premium paid as on today with opportunity cost on it.**Step 5: Calculate / Total Outflow/Inflow under Option Contract**

- Option Premium paid as on today with opportunity cost on it.
- Unhedged Position under forward contract
- Under Option Contract **using Exercise Price**

Total Outflow / Inflow under Option Hedging**Concept No. 33: Calculation of Return under FOREX**

$$\text{Return (In terms of Home Currency)} = \left[1 + \frac{P_1 - P_0 + I}{P_0} \right] (1 + C) - 1$$

P_0 = Price at the beginning

P_1 = Price at the End

I = Income from Interest/Dividend

C = Change in exchange rate.

Concept No. 34: Broken Date Contracts

- A Broken Date Contract is a forward contract for which quotation is not readily available.

Example:

If quotes are available for 1 month and 3 months but a customer wants a quote for 2 months, it will be a Broken Date Contract.

- It can be calculated by interpolating between the available quotes for the preceding and succeeding maturities.

Concept No. 35: International Fisher Effect

International Fisher Effect reflect the relationship between real interest rate, inflation rate and nominal interest rate.

Equation:

$$(1 + \text{Nominal Interest Rate}) = (1 + \text{Real Interest Rate}) (1 + \text{Inflation Rate})$$

Concept No. 36: Implied Differential in Interest Rate

- Interest rate is just another name of premium or discount of one country currency in relation to another country currency (As per IRPT).
- Premium or Discount = Difference in Interest Rate

Equation:

$$= \frac{FR (Rs./\$) - SR (Rs./\$)}{SR} \times \frac{12}{\text{Forward Period}} \times 100 = \text{Interest Rate (₹)} - \text{Interest Rate (\$)}$$

Concept No. 37: Savings due to Time Value (Discount) & Currency Fluctuation

- If the firm decides to pay today rather than in future he may get two types of benefits:
 - (i) Benefit on account of discount for pre-payment.
 - (ii) Benefit on account of currency fluctuation.

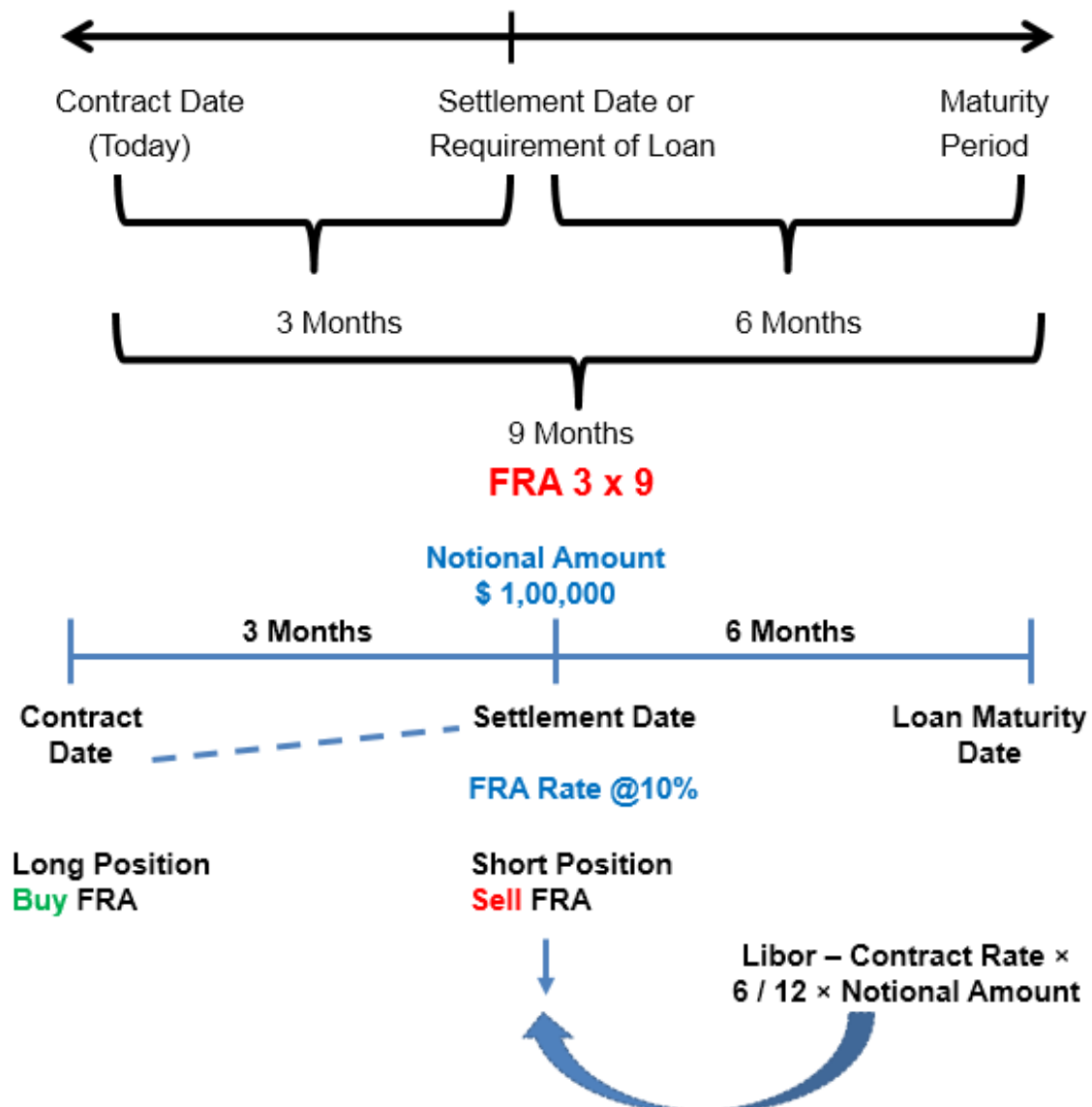
OTC Derivative

Concept No. 38: Forward Rate Agreement (FRA)

- A forward rate Agreement can be viewed as a forward contract to borrow/lend money at a certain rate at some future date.
 - These Contracts settle in cash.
 - The long position in an FRA is the party that would borrow the money. If the floating rate at contract expiration is above the rate specified in the forward agreement, the long position in the contract can be viewed as the right to borrow at below market rates & the long will receive a payment.
 - If reference rate at the expiration date is below the contract rate, the short will receive a cash from the long.
 - FRA helps borrower to eliminate interest rate risk associated with borrowing or investing funds.
 - Adverse movement in the interest rates will not affect liability of the borrower.
- Payment to the long at settlement is:

$$\text{Notional Principal} \times \frac{[\text{Floating (LIBOR)} - \text{Forward Rate}] \times \frac{\text{days}}{360}}{1 + \text{Floating rate (LIBOR)} \times \frac{\text{days}}{360}}$$

I want to take loan after 3 months for 6 months contract a FRA.



Example:

Consider an FRA that:

- ◆ Expires/Settles in 30 days.
- ◆ Is based on notional principal amount of \$ 1 million.
- ◆ Is based on 90 days LIBOR.
- ◆ Specifies a forward Rate of 5%

Assume that actual 90 days LIBOR 30 days from now (at expiration) is 6%. Compute the cash settlement payment at expiration and identify at which party makes the payment.

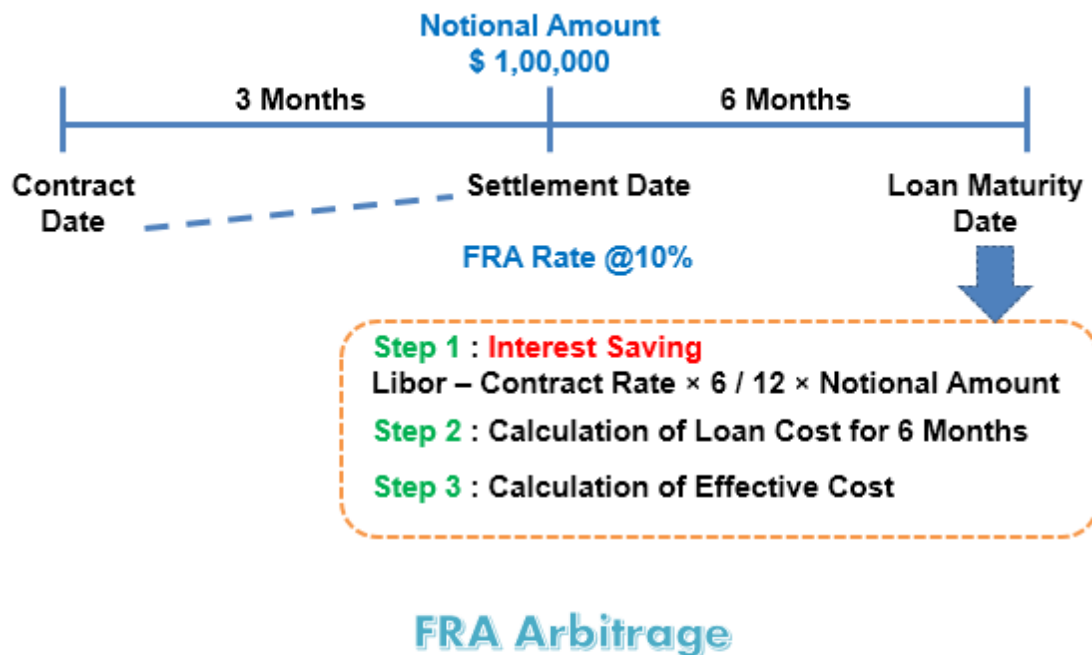
Solution:

If the long could borrow at contract rate of 5% rather than the market rate of 6%, the interest saved on a 90 day \$ 1 million loan would be:

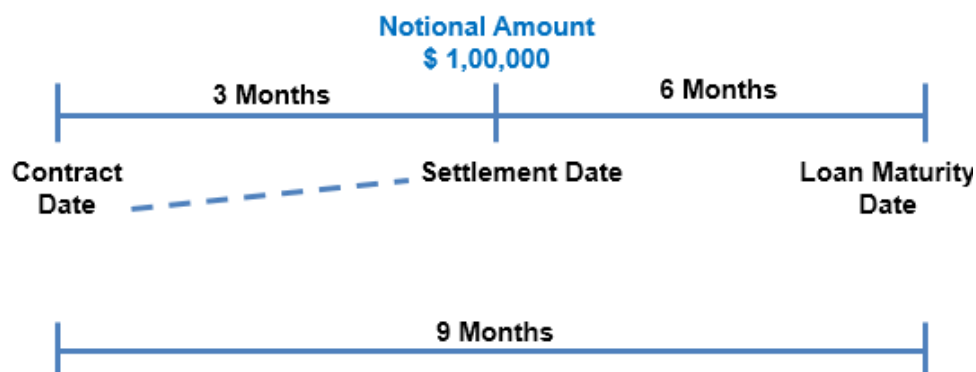
$$(0.06 - 0.05) (90 / 360) \times 1 \text{ million} = 0.0025 \times 1 \text{ million} = \$ 2,500$$

The \$ 2,500 in interest savings would not come until the end of the 90 days loan period. The value at settlement is the present value of these savings. **The correct discount rate to use is the actual rate at settlement, 6%, not the contract rate of 5%.**

The payment at settlement date from the short to the long is: $\frac{2500}{1 + \left[(0.06) \times \frac{90}{360} \right]} = \$ 2,463.05$.

**Step 1 : Calculation of Fair Forward Rate**

6 Months Forward rate 3 months from now



Step 2 : Decide from where we should borrow and where should we invest

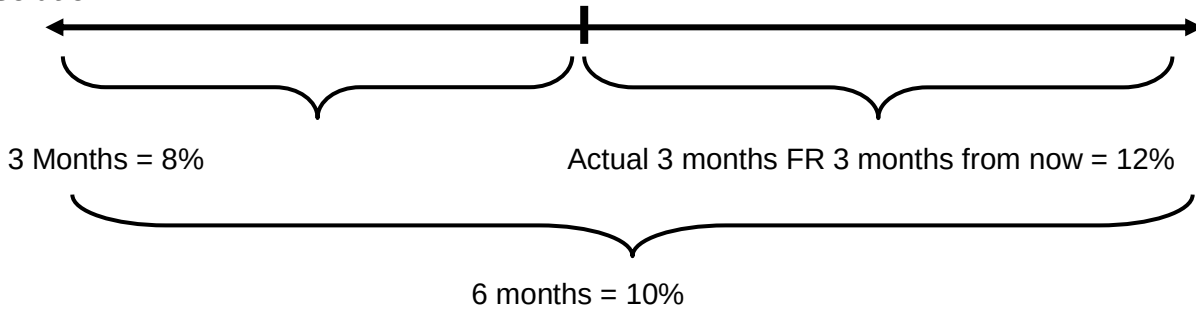
Step 3 : Calculation of Arbitrage Profit

Example:

Suppose
 3 months borrowing/ deposit rate = 8%
 6 months borrowing/ deposit rate = 10%
 3 months FR 3 months from now = 12%

Check the Arbitrage Possibility?

Solution:



FIRST CALCULATE FAIR 3 MONTHS FR 3 MONTHS FROM NOW & COMPARE IT WITH ACTUAL RATE.

$$(1 + 3 \text{ month rate}) (1 + 3 \text{ month FR 3 months from now}) = (1 + 6 \text{ months FR})$$

$$(1 + 0.08 \times \frac{3}{12}) (1 + r \% \times \frac{3}{12}) = (1 + 0.10 \times \frac{6}{12})$$

Hence Fair 3 months FR 3 months from now is = 11.76% p.a

Suppose Notional amount = ₹ 100

$$\text{Arbitrage gain} = 100 \times \{ [12\% - 11.76\%] \times \frac{3}{12} \} = 0.06$$

- 1) Borrowing for 6 months @ 10%
- 2) Deposit @ 8% for 3 months.
- 3) Further deposit @ 12% for next 3 months
- 4) Arbitrage Gain.

Deposit:

$$100 \times (1 + 0.08 \times \frac{3}{12}) (1 + 0.12 \times \frac{3}{12}) = 105.06$$

Borrow:

$$100 \times (1 + 0.10 \times \frac{6}{12}) = 105.00$$

$$\text{Arbitrage Gain} = 0.06$$

FRA Quotation:

Suppose 3 × 9 FRA (Quoted by Bank) =

8%

10%

Lending Rate

Borrowing Rate



FRA buying Rate for Bank

FRA selling Rate for Bank

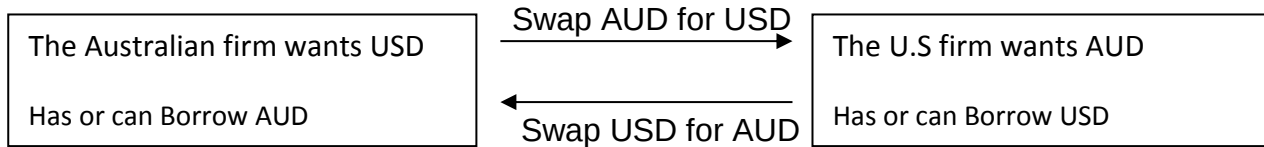


FRA selling Rate for Customer

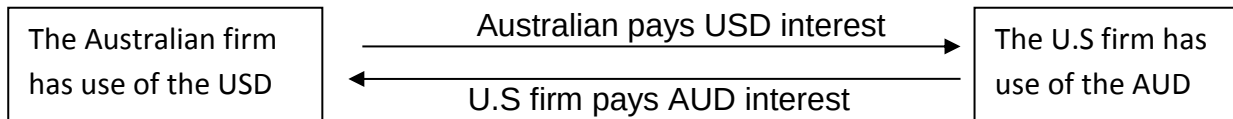
FRA buying Rate for Customer

Concept No. 39: Currency SWAP

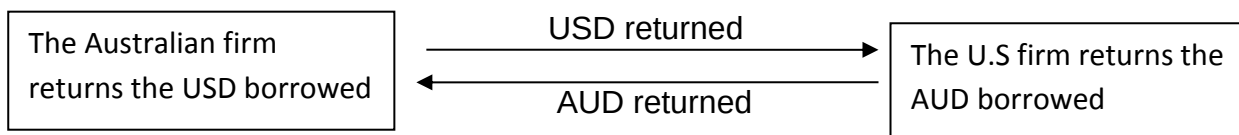
Swap Initiation



Swap Interest Payments



Swap Termination



Concept No. 40: Interest Rate Swap [Two Party]



Under SWAP Deal :

Mr. A pays Fixed rate @11% → Fixed rate payer

Mr. B pays Floating rate @ LIBOR → Floating rate payer

- Two parties exchange their interest rate obligation.
- The plain vanilla interest rate swap involves trading fixed interest rate payments for floating rate payments.
- The party who wants fixed-rate interest payments agrees to pay fixed-rate interest.
- The Counter party, who receives the fixed payments agrees to pay variable-rate interest/floating rate interest.
- The difference between the fixed rate payment and the floating rate payment is calculated and paid to the appropriate counterparty.
- Net interest is paid by the one who owes it.
- Swaps are zero-sum game. What one party gains, the other party losses.

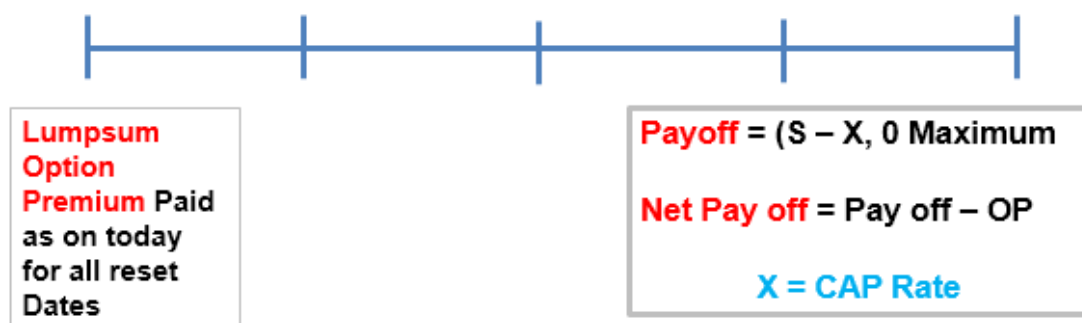
The Net formulae for the Fixed-Rate payer, based on a 360-day year and a floating rate of LIBOR is:

$$(\text{Net Fixed Rate Payment})_t = [\text{Swap Fixed Rate} - \text{LIBOR}_{t-1}] \left[\frac{\text{No.of Days}}{360} \right] [\text{National Principal}]$$

Concept No. 41: Interest Rate Caps, Floor & Collar**Interest Rate Cap:****CAP → Maximum Rate → Borrowings → Floating Rate****FLOOR → Minimum Rate → Investments → Floating Rate****Interest Rate Cap: (Maximum Rate For Borrowing @ Floating)**

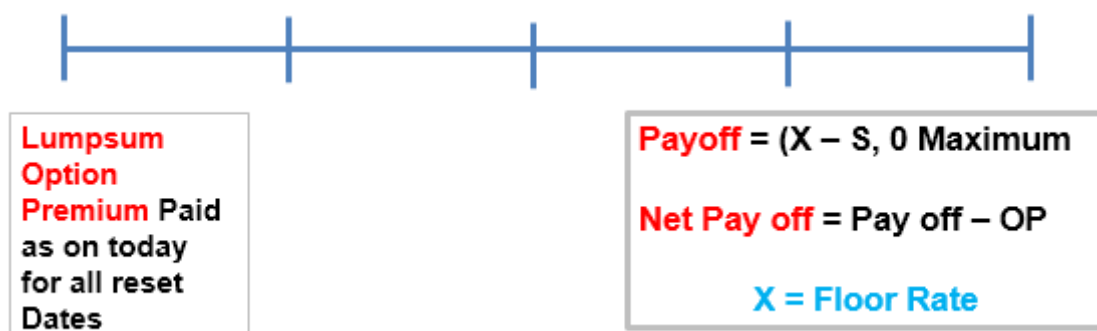
If a firm borrows at floating rate, it is afraid of interest rate rising, to hedge against the same, it will buy an interest rate cap i.e. Long call at $X = \text{Cap rate}$

- ❖ It is a series/portfolio of interest rate Call option on interest rates.
- ❖ Each particular call option being called a CAPLET.
- ❖ Caps pay when rate rises above the cap rate.

**Interest Rate Floor:****Interest Rate Floor: Minimum Rate For Investment @ Floating)**

If a firm invest at floating rate, it is afraid of interest rate falling, to hedge against the same, it will buy an interest rate Floor i.e. Long put at $X = \text{Floor rate}$

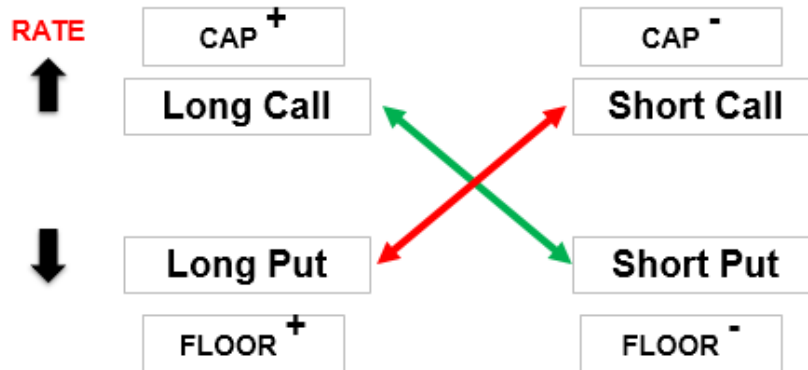
- ❖ It is a series/portfolio of Interest rate put Option on interest rate. Such particular put option being called a FLOORLET
- ❖ Floor pays when rate falls below the Floor Rate.

**Interest Rate Collar:**

- It is a combination of a Cap and a Floor.
- Premium paid on one option would be compensated with the premium received on selling another option.
- If premium paid on caps is equal to the premium received on floor, then it would be called Zero Cost Collar.

Interest Rate Collar:

It is a combination of a Cap and a Floor.



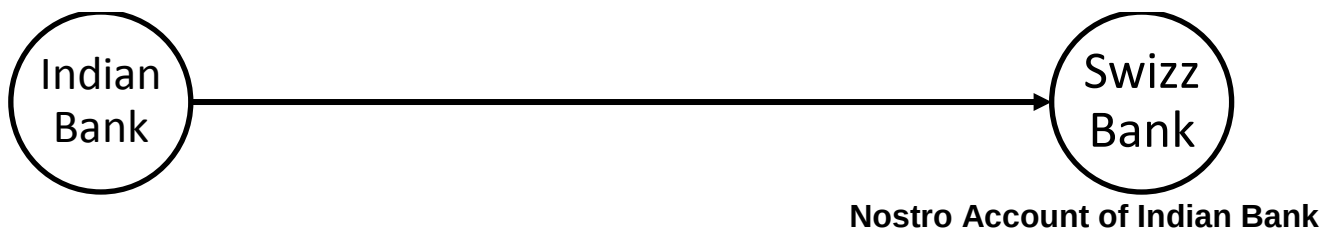
- A floating rate borrower may buy a cap $[C^+]$ & simultaneously sells a floor i.e. $[P^-]$. Initial outflow will reduce. ($C^+ = \text{Long Call}$ & $P^- = \text{Short Put}$)
- Similarly, a floating rate investor may buy a Floor (P^+) & simultaneously sell a Cap (C^-) . Initial outflow will reduce. ($P^+ = \text{Long Put}$ & $C^- = \text{Short Call}$)

Concept No. 42: Nostro Account, Vostro Account and LORO Account

1. Nostro Account [Ours account with you]

This is a current account maintained by a domestic bank/dealer with a foreign bank in foreign currency.

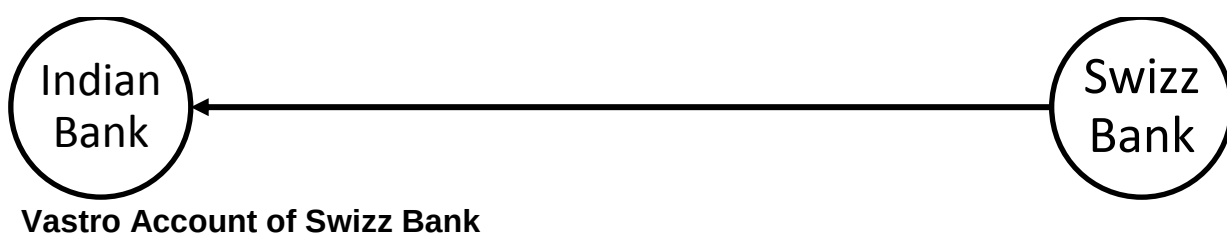
Example: Current account of SBI bank (an Indian Bank) with swizz bank in Swizz Franc. (CHF) is a Nastro account.



2. Vostro Account [Yours account with us]

This is a current account maintained by a foreign bank with a domestic bank/dealer in Rupee currency.

Example: Current account of Swizz bank in India with SBI bank in Rupee (₹) currency.

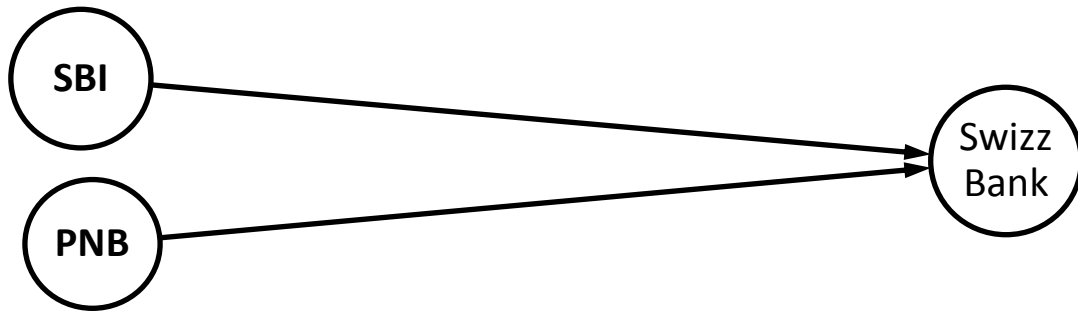


3. Loro Account [Our account of their Money with you]

This is a current account maintained by one domestic bank on behalf of other domestic bank in foreign bank in a foreign currency.

In other words, Loro account is a Nostro account for one bank who opened the bank and Loro account for other bank who refers first one account.

Example: SBI opened Current account with swizz bank. If PNB refers that account of SBI for its correspondence, then it is called Loro account for PNB and it is Nostro account for SBI.



1. Nostro Account of SBI
2. PNB refers a/c of SBI for its transaction then it is called Loro account for PNB.

Note:

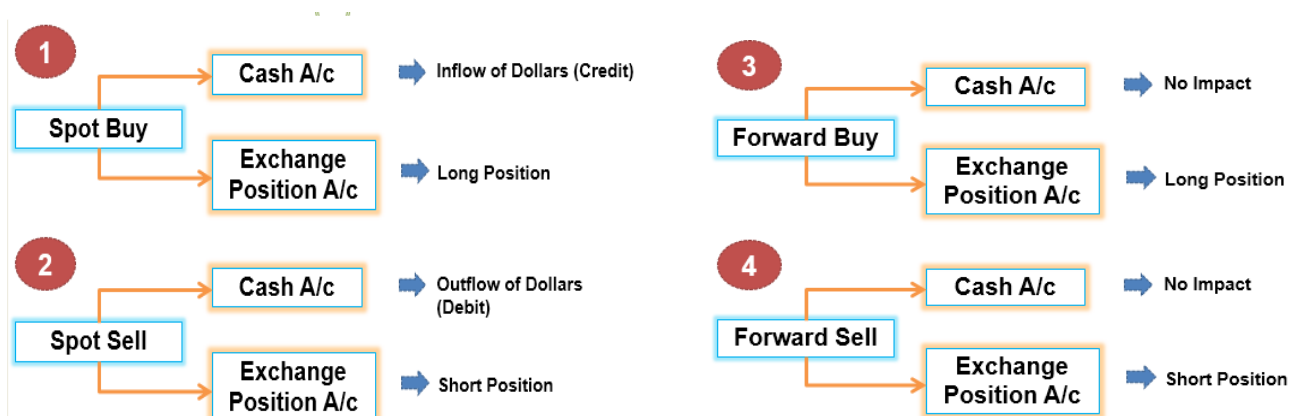
SPOT purchase/sale of GHF affects both exchange position as well as Nostro account. However, forward purchase/sale affects only the exchange position.

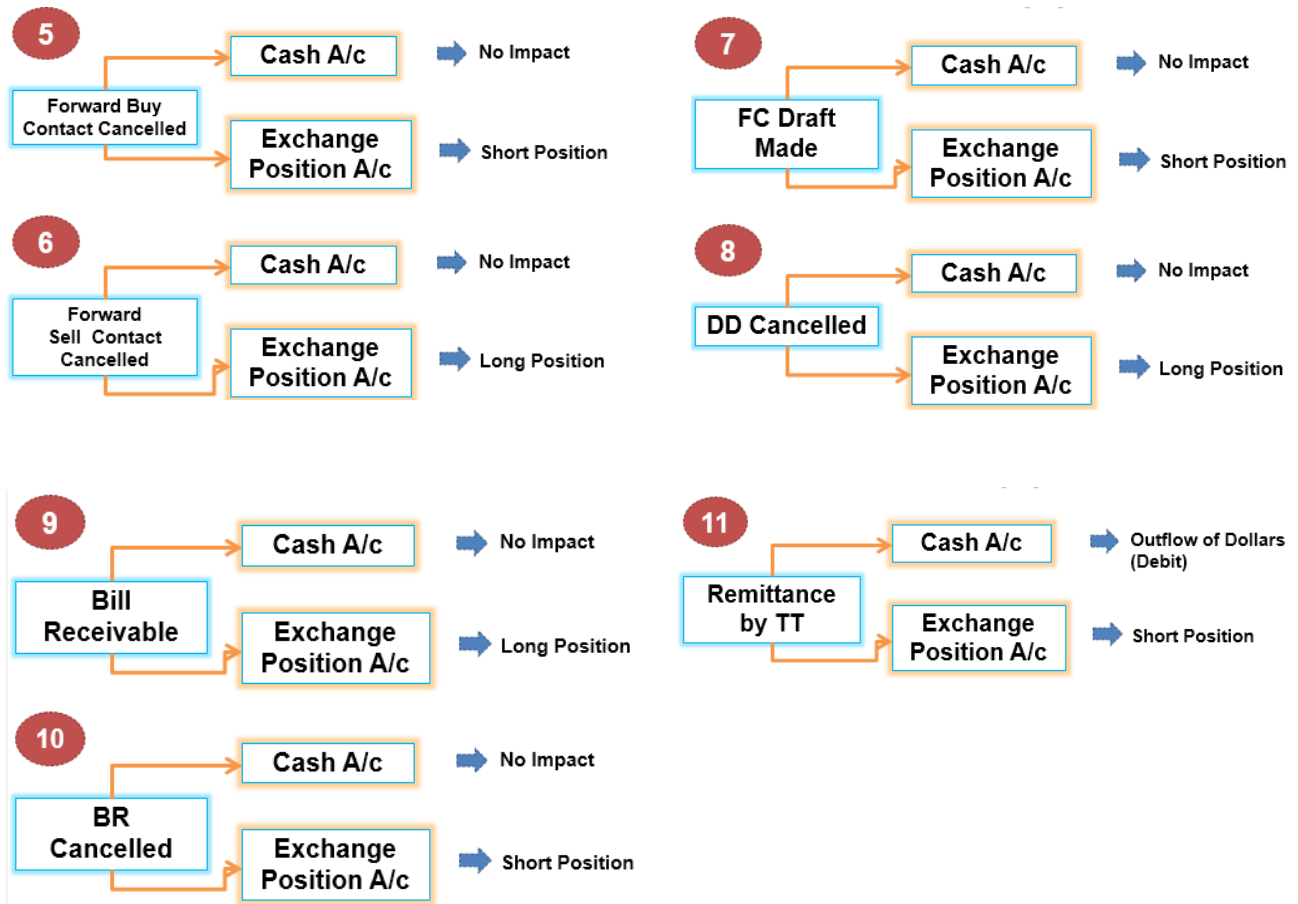
Nostro A/c (Cash A/c) in Foreign Currency

Particulars	Dr. [Debit] Outflow of Dollars (FC)	Cr. [Credit] Inflow of Dollars (FC)
-------------	---	---

Exchange Position A/c

Particulars	Long Dollar Buy (FC)	Short Dollar Sell (FC)
-------------	-------------------------	---------------------------







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