# SFM

# STRATEGIC FINANCIAL MANAGEMENT

# FOREX & OTC Derivatives Summary

## By CA. Gaurav Jain

## 100% Conceptual Coverage With Live Trading Session

## Complete Coverage of Study Material, Practice Manual & Previous year Exam Questions

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# OUR SHINING STAR

## NOV - 2014

## *Keshav Goel*

## Scoring 83 Marks in SFM

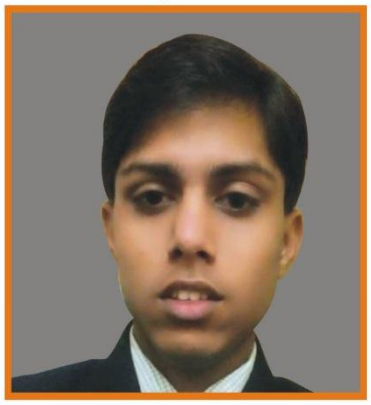
## (All India 18th Rank)

## Roll No. 132485

**Nov. 2014**

**Anish Gupta**
Roll No. 188172
For Scoring 68 Marks in SFM
(All India 22nd Rank)

**May 2014**



**Pravesh Khandelwal**
Roll No. 125761
For Scoring 85 Marks in SFM
(All India 2nd Highest)

**Nov. 2013**

**Nishant Gupta**
Roll No. 162871
For Scoring 77 Marks in SFM
(All India Rank 17th Rank)

| Nov. 2014 | Marks | Roll No. |
|---|---|---|
| NIKHIL DANGRI | 73 | 122733 |
| DIVYA GOEL | 72 | 137546 |
| BIKASH THAKUR | 72 | 128998 |
| NITISH JAIN | 72 | 127328 |
| SAGAR ARORA | 70 | 123653 |
| SHWETA BANGER | 69 | 129045 |
| ASIF | 69 | 128643 |
| KAPIL MANCHANDA | 68 | 181015 |
| TIKAM CHAND | 68 | 114487 |

| May 2014 | Marks | Roll No. |
|---|---|---|
| CHAVI AGARWAL | 73 | 123341 |
| ABHILASHA GUPTA | 72 | 127225 |
| ANISH MUNJAL | 70 | 121546 |
| MUDHI GOEL | 70 | 121971 |
| AYUSHI AGARWAL | 69 | 133383 |

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# BEST RESULT IN DELHI-NCR IN MAY 2016 EXAMS

## More than 50 Exemptions

**Lakshay Gupta**
Roll No. 438484
Scoring 85 Marks in SFM

**Vinod Gupta**
Roll No. 428103
Scoring 81 Marks in SFM

**Paras Khurana**
Roll No. 443280
Scoring 79 Marks in SFM

**Vidhu Sah**
Roll No. 496735
Scoring 78 Marks in SFM

**Swati Mundra**
Roll No. 438473
Scoring 77 Marks in SFM

**Divy Sethi**
Roll No. 496393
Scoring 77 Marks in SFM

**Ayush Agarwal**
Roll No. 432340
Scoring 77 Marks in SFM

**Tarun Surekha**
Roll No. 508367
Scoring 75 Marks in SFM

**Taraana Talwar**
Roll No. 425330
Scoring 75 Marks in SFM

**Rocky Jangid**
Roll No. 492274
Scoring 73 Marks in SFM

**Priyanka Mittal**
Roll No. 439304
Scoring 73 Marks in SFM

**Mayank Chaudhary**
Roll No. 431909
Scoring 73 Marks in SFM

**Ankit Jain**
Roll No. 434716
Scoring 73 Marks in SFM

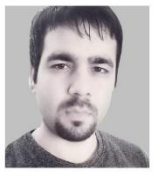
**Rashika Jain**
Roll No. 506933
Scoring 72 Marks in SFM

**Niklesh Agarwal**
Roll No. 509326
Scoring 71 Marks in SFM

**Sejal Goel**
Roll No. 458947
Scoring 71 Marks in SFM

**Anuskh Kapoor**
Roll No. 437438
Scoring 71 Marks in SFM

**Deepak Singh**
Roll No. 438660
Scoring 69 Marks in SFM



**Akhil Madaan**
Roll No. 509731
Scoring 69 Marks in SFM

**Sumeet Jha**
Roll No. 434634
Scoring 68 Marks in SFM

**Sameer Kapoor**
Roll No. 443674
Scoring 68 Marks in SFM

**Madhu Pokharel**
Roll No. 435039
Scoring 67 Marks in SFM

**Amit Kr. Keshwani**
Roll No. 426690
Scoring 66 Marks in SFM

**Sumit Jain**
Roll No. 439441
Scoring 65 Marks in SFM

**Heena Mohla**
Roll No. 479329
Scoring 65 Marks in SFM

**Aradhana Shankar**
Roll No. 437452
Scoring 65 Marks in SFM

**Akshay Uppal**
Roll No. 428868
Scoring 65 Marks in SFM

**Sumit Pandia**
Roll No. 418602
Scoring 63 Marks in SFM

**Ankit Kumar**
Roll No. 438304
Scoring 63 Marks in SFM

**Nishant Grover**
Roll No. 435237
Scoring 63 Marks in SFM

**Manish Wahi**
Roll No. 435120
Scoring 63 Marks in SFM

**Madhvi Agarwal**
Roll No.
Scoring 61 Marks in SFM

**Anurag Sehgal**
Roll No. 496967
Scoring 61 Marks in SFM

**Parth Agarwal**
Roll No. 481646
Scoring 60 Marks in SFM

**Abhishek Jain**
Roll No. 430463
Scoring 60 Marks in SFM

# Best Result in Delhi/NCR in a very short span of time

**Ankur Ahuja**
Roll No. 118704
Scoring 81 Marks in SFM

**Shubham Bansal**
Roll No. 126553
Scoring 77 Marks in SFM

**Vipul Kohli**
Roll No. 119771
Scoring 76 Marks in SFM

**Samyak Jain**
Roll No. 117279
Scoring 75 Marks in SFM

**Nikhil Dangri**
Roll No. 122733
Scoring 73 Marks in SFM

**Akshay Gupta**
Roll No. 143242
Scoring 73 Marks in SFM

**Nitish Jain**
Roll No. 127328
Scoring 72 Marks in SFM

**Divya Goel**
Roll No. 137546
Scoring 72 Marks in SFM

**Bikash Thakur**
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**Abhilasha Gupta**
Roll No. 127225
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**Preeti Gupta**
Roll No.
Scoring 70 Marks in SFM

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Roll No. 121546
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**Mudit Goel**
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**Naman Jain**
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Roll No. 129045
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**Arvind Kuliyal**
Roll No. 132719
Scoring 68 Marks in SFM

**Ankur Gulati**
Roll No. 123917
Scoring 68 Marks in SFM

**Nishant Bhardwaj**
Roll No. 115218
Scoring 68 Marks in SFM

**Hemant Mittal**
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Scoring 67 Marks in SFM

**Ayushi Jain**
Roll No. 128689
Scoring 67 Marks in SFM

**Ankur Raheja**
Roll No. 125015
Scoring 67 Marks in SFM

**Marksshishir Matenja**
Roll No. 118975
Scoring 66 Marks in SFM

**Alisha Aggarwal**
Roll No. 126822
Scoring 65 Marks in SFM

**Pooja Gupta**
Roll No. 120143
Scoring 64 Marks in SFM

**Tarun Mehrotra**
Roll No. 121080
Scoring 64 Marks in SFM

**Anand Kankani**
Roll No. 128791
Scoring 63 Marks in SFM

**Ratan Bhaduria**
Roll No. 126331
Scoring 63 Marks in SFM

**Rohit Rathi**
Roll No.
Scoring 62 Marks in SFM

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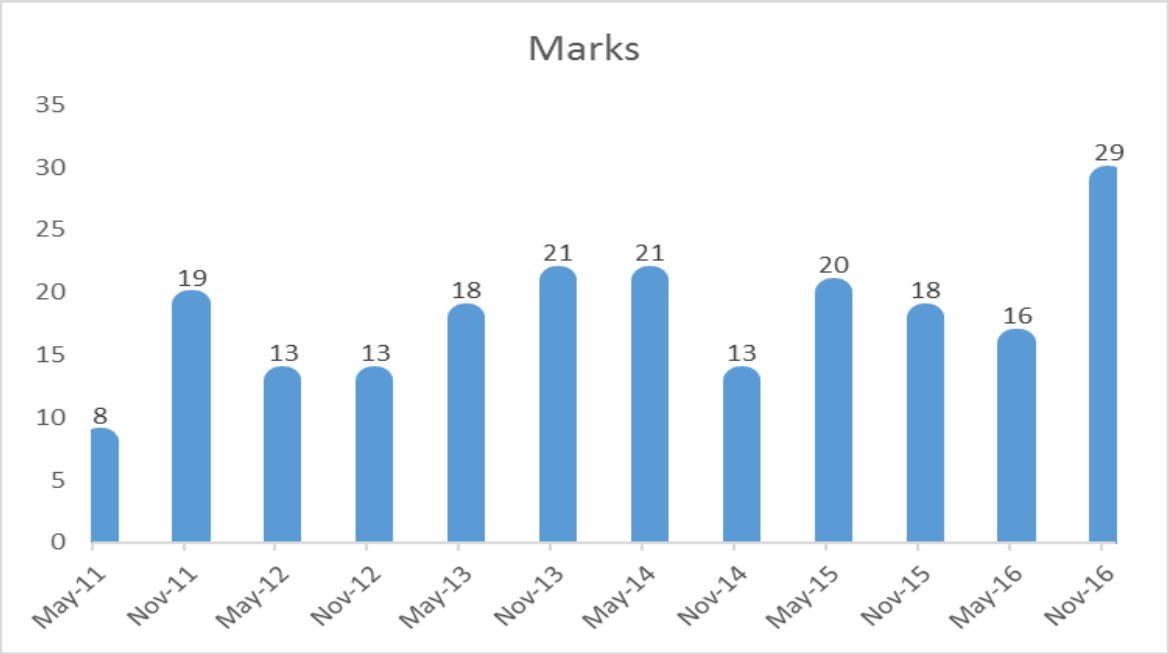
# FOREIGN EXCHANGE RISK MANAGEMENT

# (FOREX) + OTC Derivatives

## Attempt wise Marks Analysis of Chapter



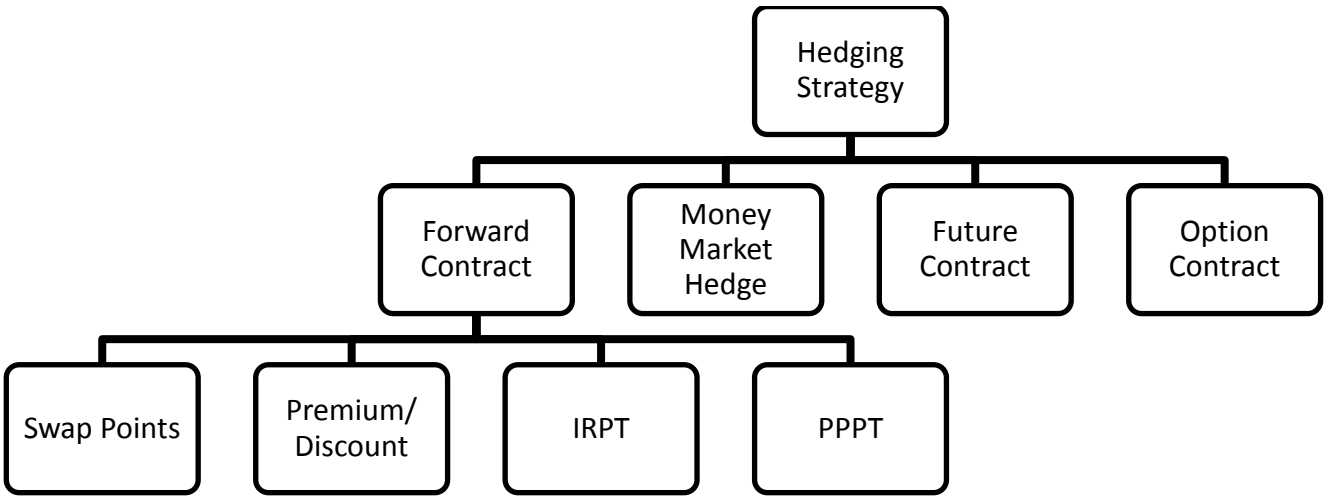

| Attempt | Marks |
|---|---|
| May-2011 | 8 |
| Nov-2011 | 19 |
| May-2012 | 13 |
| Nov-2012 | 13 |
| May-2013 | 18 |
| Nov-2013 | 21 |
| May-2014 | 21 |
| Nov-2014 | 13 |
| May-2015 | 20 |
| Nov-2015 | 18 |
| May-2016 | 16 |
| Nov-2016 | 29 |

## ***Concept No. 1: Introduction***

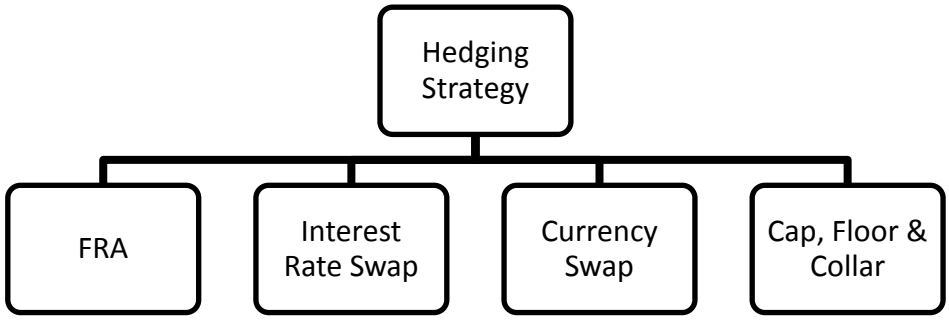
Three types of transactions in FOREX market which associates two types of risks:

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.
**Rule2:** 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.

**Example:**
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

**Example**:
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$ = ₹ 55
**Explanation:**

Bank buys 1$ at ₹ 55.
Bank sells 1$ at ₹ 55.

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

**Example:**

1$ = ₹50 ---------- ₹55

| Left Hand Side Currency | Bid Rate/ Bank Buying rate of left hand currency | Ask Rate/ Bank Selling rate of left hand currency |
|---|---|---|

**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.

**Spread = Ask Rate – Bid Rate**

## ***Concept No. 4: Direct Quote & Indirect Quote***

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

**Example:** 1$ = ₹ 50 is DQ for Rupee.

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

**Example:** 1Re = 0.0200$ 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.

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

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

OR 1 Re. = 0.02090 --- 0.02116 **(2nd Quote)**

## ***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: SWAP POINTS/ Forward Margin/ Forward-Spot Differential***

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

**How to ADD or DEDUCT Swap Points**

- Swap Point should be **Added or Deducted** from the last decimal point in the **Reverse Order**.

**Calculation of Forward rate using Spot Rate &Swap Points**:

**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. 8: 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 => 1$ = ₹ 45
FR => 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 => 1Re. = $\frac{1}{45}$ $ = 0.0222
FR => 1Re. = $\frac{1}{50}$ $ = 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. 9: Calculation of Forward Rate when Spot Rate & Premium or Discount is given***

**Example 1:**
SR → 1$ = ₹ 48.50
$ is at premium = 5%
Calculate FR?

**Solution:**
FR → 1$ = ₹ 48.50 (1 + 0.05)
1$ = ₹ 50.925

## ***Concept No. 10: Cross Rate***

***Cross Rate*** between ant 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.

| | | |
|---|---|---|
| Long Position | **To Cover** → | Short Position |
| Short Position | | Long Position |

## ***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 $X = Y \times SR$

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

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

**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:

$$X (1+ I_{₹}) = y (1+ I_{\$}) \times FR$$

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

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

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

**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. |
|---|---|
| $\frac{\textbf{FR (Rs./\$)}}{\textbf{SR (Rs./\$)}} = \frac{\textbf{1+Periodic Inflation Rate ( Rs.)}}{\textbf{1+Periodic Inflation Rate ( \$ )}}$ | $\frac{\textbf{FR (Rs./\$)}}{\textbf{SR (Rs./\$)}} = \frac{\textbf{(1+ Inflation Rate (Rs.))}^{\textbf{n}}}{\textbf{(1+ Inflation Rate (\$))}^{\textbf{n}}}$ |

## *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:**

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

**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 $INT_{₹}$ And USA is $INT_{\$}$. Spot Rate is 1$ = ₹ SR, Forward Rate => 1$ = ₹ FR

Let assume Investor is having ₹ A for investment

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

$$A_1 = A\,(1 + INT_{₹})$$

**Option 2: When investor invest ₹ A in USA:**
***Amount of Equivalent ₹ Received after one year***

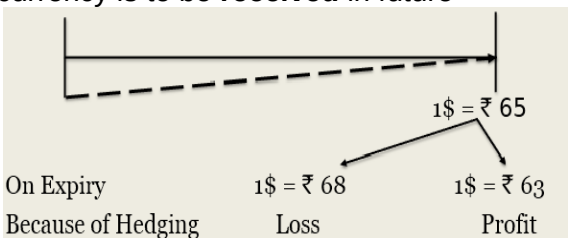
$$A_2 = \left[\frac{A}{SR}\ \$\ (1 + INT_{\$})\right] \times FR$$

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

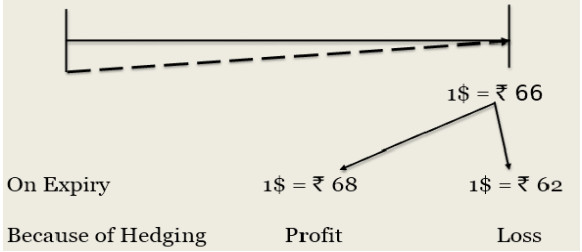
**Note:**
- If in 1st try we have arbitrage profit, then no need to solve 2nd case.
- If in 1st try we have arbitrage loss, then 2nd case must be solved.

## *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

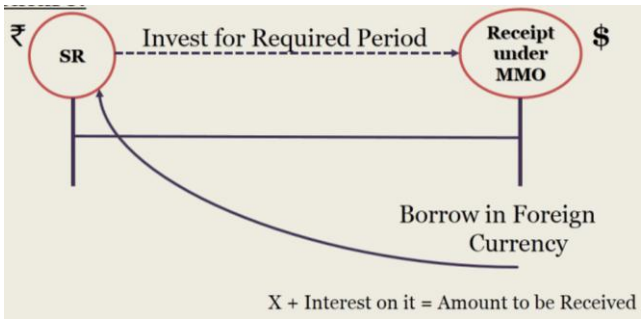



- In case of foreign currency is to be **Paid** in future



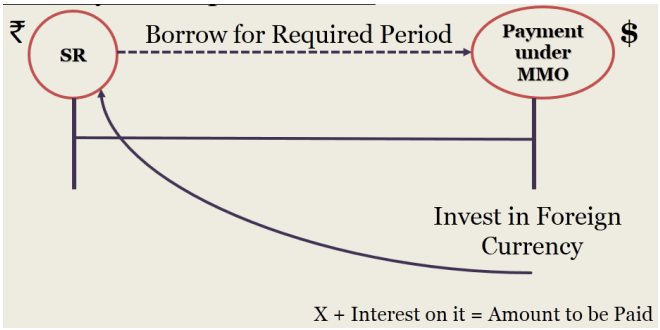
## *Concept No. 18: Money Market Operations*

**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: 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. 20: 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 + RADR) = (1 + Risk-free rate) (1 + 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.

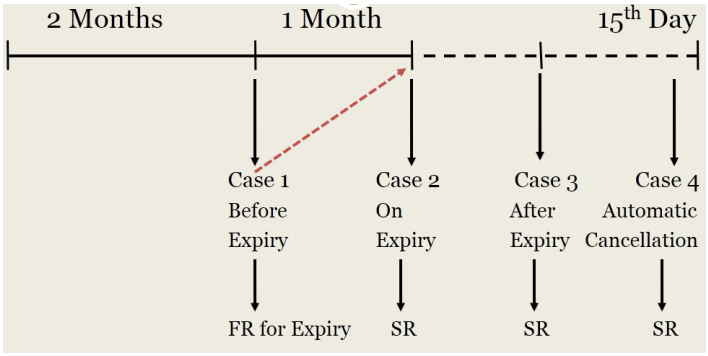
## *Concept No. 21: Modification under Forward Contract*

Forward Contract are legal binding contracts, which must be fulfilled by each and every party.
In case of cancellation of Forward Contracts, following rules must be followed:

**How to cancel Forward Contract**

- Forward Contracts must be cancelled by entering into a reverse contract.
- Buying Forward Contract must be cancelled by Selling Contract
- Selling Forward Contract must be cancelled by Buying 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 15th day i.e. when grace period ends. |

**Settlement of Profit/Loss:**

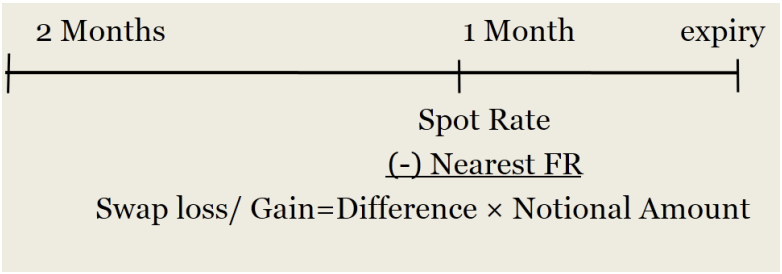
| | | |
|---|---|---|
| a) | Cancel on or before due date | Customer will be eligible for both profit/Loss. |
| b) | Cancel after due date or Automatic Cancellation | Customer will be eligible only for Loss |

## ***Concept No. 22: Extension of Forward Contract***

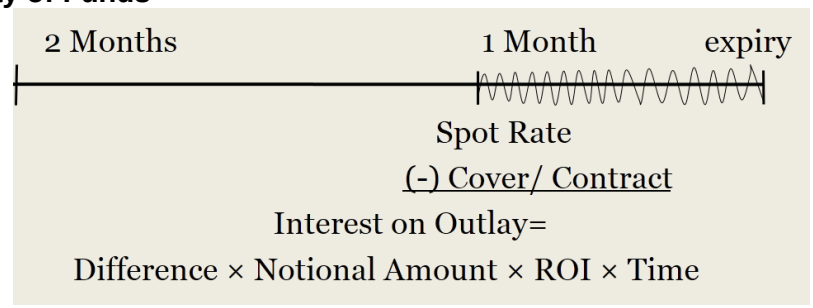
**Step 1**: Cancellation of original Contract
**Step 2**: Entering into a new forward contract for the extended period.

***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**

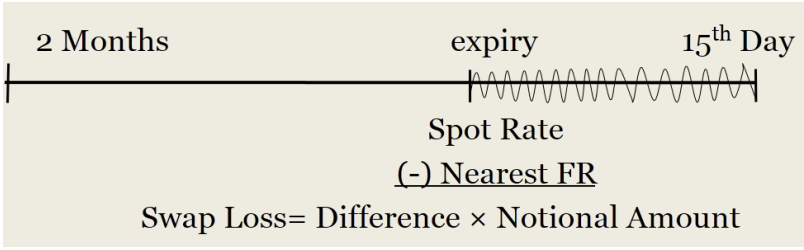



***Cancellation after Due Date/ Automatic Cancellation***

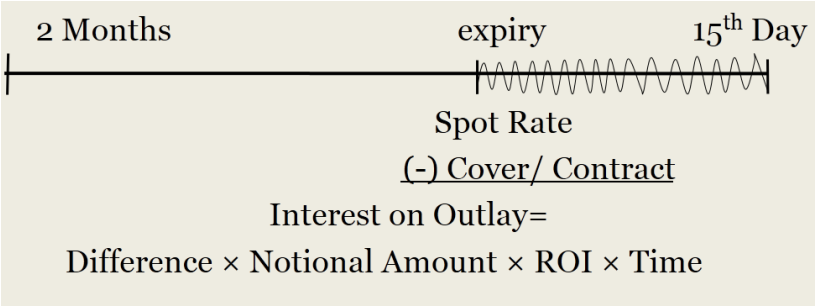
a) Late Delivery
b) Extension after due date

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: 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. 24: Contribution to Sales Ratio based decision under FOREX***

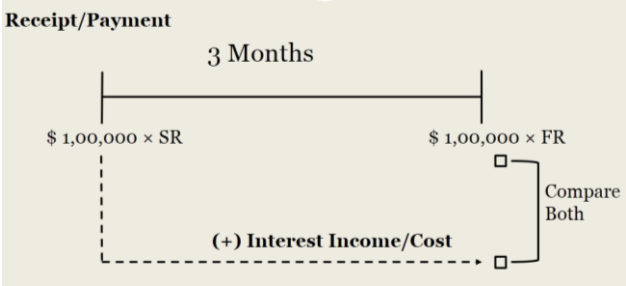
Contribution to Sales Ratio = $\frac{\textbf{Contribution (Sales}-\textbf{VC)}}{\textbf{Sales}} \times 100$

**Decision:**
Higher the C/S Ratio, Better the position.

## ***Concept No. 25: 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. 26: 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. 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:**
EUR/ USD, USD/ JPY, GBP/ USD, AUD/ USD, etc.

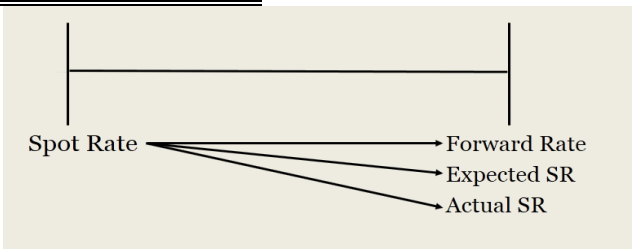
- The L.H.S currency is called "Base Currency" and the R.H.S currency is called "Quote Currency".
- The currency pair shows how much of the quote currency is needed to purchase one unit of the base currency.

**Example:**
A price quote of EUR/USD at 1.30851 means
1 Euro = 1.30851 $

**Note:**

- Currency Pair will always be in Capital Letter, consist of three Letters.

## ***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:**
HDFC Bank 1$ = ₹ 49.45
Axis Bank 1$ = ₹ 49.50

- If customer want to buy $ select HDFC Bank Quotation.
- If customer want to sell $, select Axis Bank Quotation.

## Concept No. 30: Calculation of Return under FOREX

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. 31: 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. 32: Expected Spot Rate

**Spot Rates × Probability = Expected Spot Rate**

## Concept No. 33: Currency Futures

***Steps Involved:***

**Step 1: 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**

No. of Lots = $\frac{\textbf{Value of Position}}{\textbf{Value of one Contract}} = \frac{\$}{\$}$

**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**

- Calculate Profit and Loss under Future Contract
- Calculate Total Receipt/Total Payment using SR on Expiry
- Calculation of opportunity cost of initial margin if Given

## Concept No. 34: Currency Options

**Steps Involved:**

**Step 1: Decide Position**

- Long Call — Short Call
- Long Put — 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

**Step 2: 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 Settlement Amount/ 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

## ***Concept No. 35: International Fisher Effect***

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

**Equation:**

**(1+ Nominal Interest Rate) = (1+ Real Interest Rate) (1+ 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:**

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

## ***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:

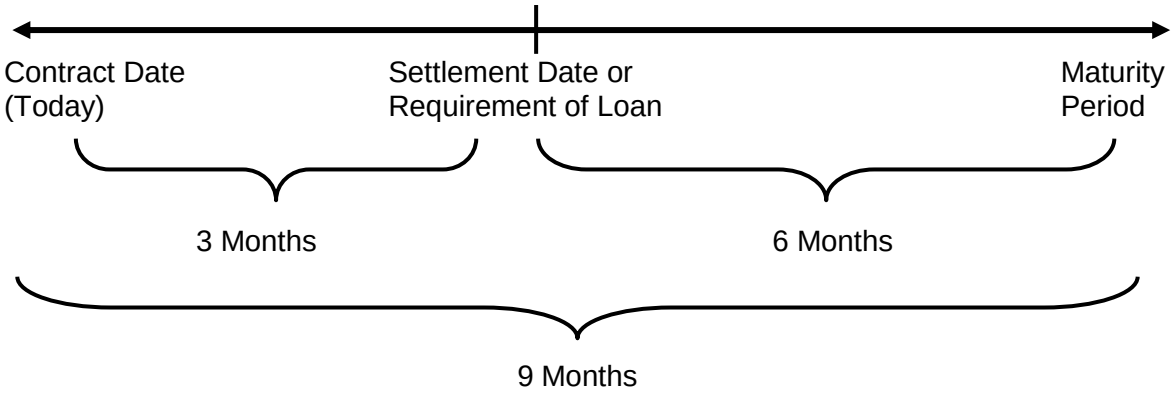
**(i)** Benefit on account of discount for pre-payment.

**(ii)** Benefit on account of currency fluctuation.

# OTC Derivative

## *Concept No. 38: Forward Rate Agreement (FRA)*

**Example:** FRA = 3 × 9
I want to take loan after 3 months for 6 months contract a 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:

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

**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) × 1 million = 0.0025 × 1 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.

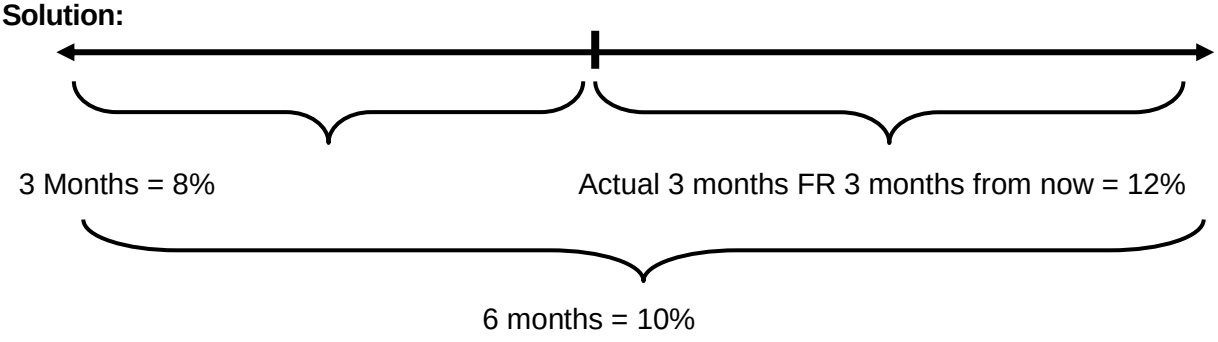
### FRA Arbitrage

**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 month rate) (1 + 3 month FR 3 months from now) = ( 1 + 6 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

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

Arbitrage Gain = 0.06

**FRA Quotation:**

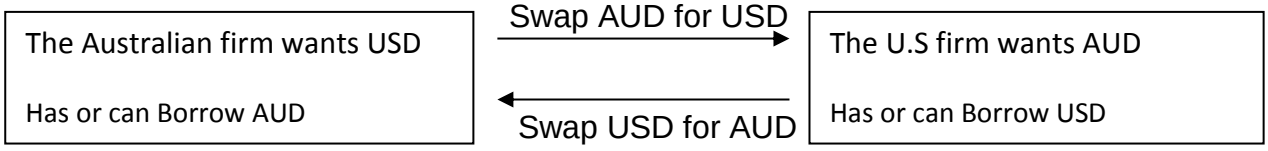
Suppose 3 × 9 FRA (Quoted by Bank) = 8% ---- 10%

Lending Rate → FRA buying Rate for Bank → FRA selling Rate for Customer

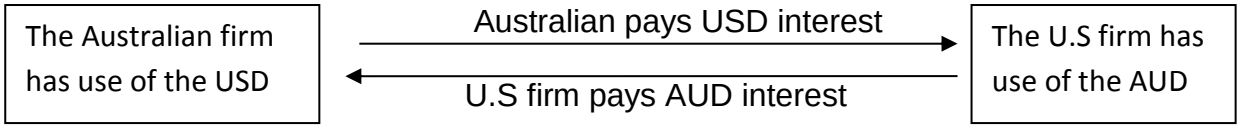
Borrowing Rate → FRA selling Rate for Bank → FRA buying Rate for Customer

## ***Concept No. 39: Currency SWAP***

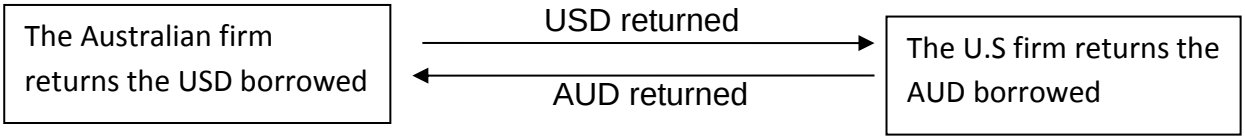
**Swap Initiation**




**Swap Interest Payments**




**Swap Termination**




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

- 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:

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

## *Concept No. 41: Interest Rate Caps, Floor & Collar*

**Interest Rate Cap:**

- It is a series of interest rate Call options with strike rates equal to the Cap rate.
- Caps pay when rate rises above the cap rate.
- Lump-sum Premium for all Call Option would be payable upfront which is being amortized equally to calculate the benefit at each reset period.

**Interest Rate Floor:**

- It is a series of Interest rate put Options with strike rates equal to the floor rate.
- 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.