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# FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT

Prof. (Dr.) Asheesh Pandey



# Introduction

The forex market is the market in which participants can buy, sell, exchange, and speculate on currencies.



| Currency                   | Bank Buys Notes | Bank Sells Notes |
|----------------------------|-----------------|------------------|
| US Dollar USA              | 31.51           | 32.8             |
| Singapore Dollar Singapore | 23.46           | 24.5             |
| 日本円 (100) Japan            | 25.83           | 28.0             |
| 人民币 China                  | 1.7             |                  |

# FX Market Participants

The forex market is made up of Banks, Commercial Companies, Central Banks, Investment management firms, Hedge funds, and Retail Forex Brokers and Investors.



# The Forex Market

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The forex market is made up of two levels; the interbank market and the over-the-counter (OTC) market.

The interbank market is where large banks trade currencies for purposes such as hedging, balance sheet adjustments, and on behalf of clients.

The OTC market is where individuals trade through online platforms and brokers.

# What are Foreign Exchange Rates?

**Spot transaction** is an agreement between two parties to buy one currency against selling another currency at an agreed price for settlement on the spot date. Most spot market transactions have a T+2 settlement date.

**Forward transaction** is an agreement between you and the bank to purchase one currency against selling another currency at a fixed price for delivery on an agreed date in the future

# Bid, Ask and Spread

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## Bid, Ask and Spread

A foreign exchange quotes are two-way quotes, expressed as a 'bid' and ask' rates.

Bid is the price at which the dealer/bank is willing to buy another currency.

The ask or offer is the rate at which the dealer/ bank is willing to sell another currency.

# BID / ASK

BID, BUY –  
dealers/bank's  
buy price

ASK, SELL ,  
OFFER –  
dealers/banks  
sell price



# Bid, Offer and Spread

For example, a dealer may quote Indian rupees as Rs 79.80 - 79.90 vis-a-vis dollar.

That means that he is willing to buy dollars at Rs 79.80/\$ (sell rupees and buy dollars), while he will sell dollar at Rs 79.90/\$ (buy rupees and sell dollars).

The difference between the bid and the offer is called the spread.

The offer/ask is always higher than the bid as inter-bank dealers make money by buying at the bid and selling at the offer/ask

# Bid / Ask & Spread

If you want to buy currency, you have to pay the higher ask price, but if you want to sell currency, you have to sell it at the lower bid price.

So if you were to buy currency, then immediately sell it back to the same dealer, the dealer would make money, and you would lose money.

Thus, the spread is the **transaction cost** of trading currency.

# Quiz 1

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John is an American traveller visiting Europe. The cost of purchasing euros at the airport is EUR 1 = USD 1.20 / USD 1.30 , John wants to buy EUR 15,000 , how many dollars he has to pay to the dealer .

- A. USD 13000
- B. USD 19,500
- C. USD 18,000
- D. USD 15,000

# 1

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John is an American traveller visiting Europe. The cost of purchasing euros at the airport is EUR 1 = USD 1.20 / USD 1.30 , George wants to buy EUR 15,000 , how many dollars he has to pay to the dealer .

- A. USD 13000
- B. **USD 19,500**
- C. USD 18,000
- D. USD 15,000

# Quiz 2

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George is an American traveller returning from Europe. The cost of euros at the airport is EUR 1 = USD 1.20 / USD 1.30 , George wants to sell EUR 3,000 , how many dollars he will get from the dealer

- A. USD 5,000
- B. USD 3,600
- C. USD 3,900
- D. USD 3,000

# 2

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George is an American traveller returning from Europe. The cost of euros at the airport is EUR 1 = USD 1.20 / USD 1.30 , George wants to sell EUR 3,000 , how many dollars he will get from the dealer

- A. USD 5,000
- B. **USD 3,600**
- C. USD 3,900
- D. USD 3,000

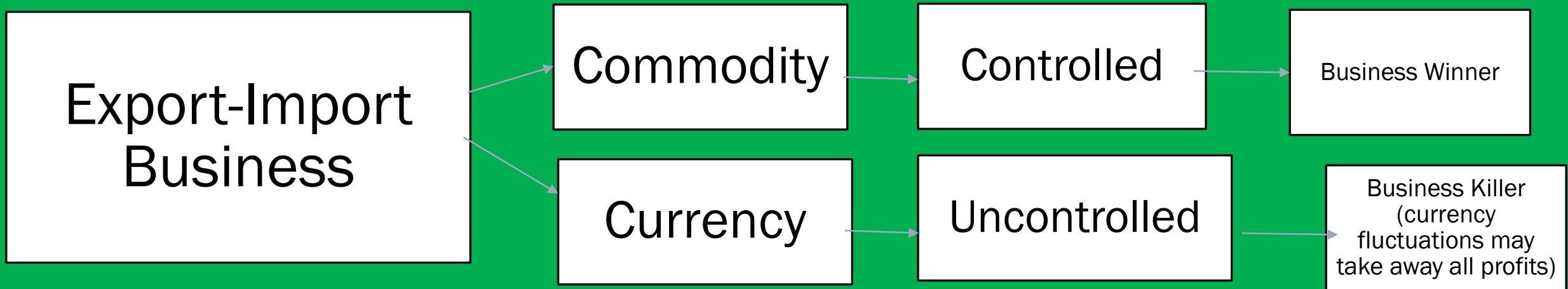
# FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT

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Foreign exchange (FX) risk is an intrinsic part of doing international business.

The values of major currencies constantly fluctuate against each other, creating income uncertainty for your business.

# FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT





# FOREIGN EXCHANGE EXPOSURE: UNHEDGED

Export Mangoes (May)

Receivable 3 Month (\$1  
lakh)

At \$1=Rs.75 Payment,  
Rs. 75 Lakhs

If in August, \$1 = Rs.78

Receivable= Rs. 78 Lakhs

Profit =Rs. 3 lakhs

If in August, \$1 = Rs. 72

Receivable =Rs.72 Lakhs

Loss =Rs. 3 Lakhs

# Currency Price Effect

US \$ Price

75

78

72

Importer

Booking

Loss

Profit

Exporter

Booking

Profit

Loss

## Global Currency Markets

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- ✓ One of the largest and most liquid in the world
- ✓ Daily turnover of \$ 6.5 Trillion
- ✓ Main trading centers are
  - ✓ London (38%)
  - ✓ New York (18%)
  - ✓ Tokyo (06%)
  - ✓ Singapore (05%)
- ✓ Over 85% of all FX transactions involve 7 major currencies
- ✓ Market never sleeps and has its own rhythm ( 24/7 )
- ✓ Starts in Sydney and ends in St. Francisco
- ✓ Markets: Spot, Forward, Futures and Options
- ✓ Currency Derivatives started in 1972 at CME



Source: BIS 2017 Report



# USD to INR Chart

Dollar has appreciated 10% in last one year

• 1 USD = 82.2281 INR Oct 18, 2022, 03:21 UTC

US Dollar to Indian Rupee

12H 1D 1W 1M 1Y 2Y 5Y 10Y



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75-----82.50

<https://www.xe.com/currencycharts/?from=USD&to=INR>

# USD to INR Chart

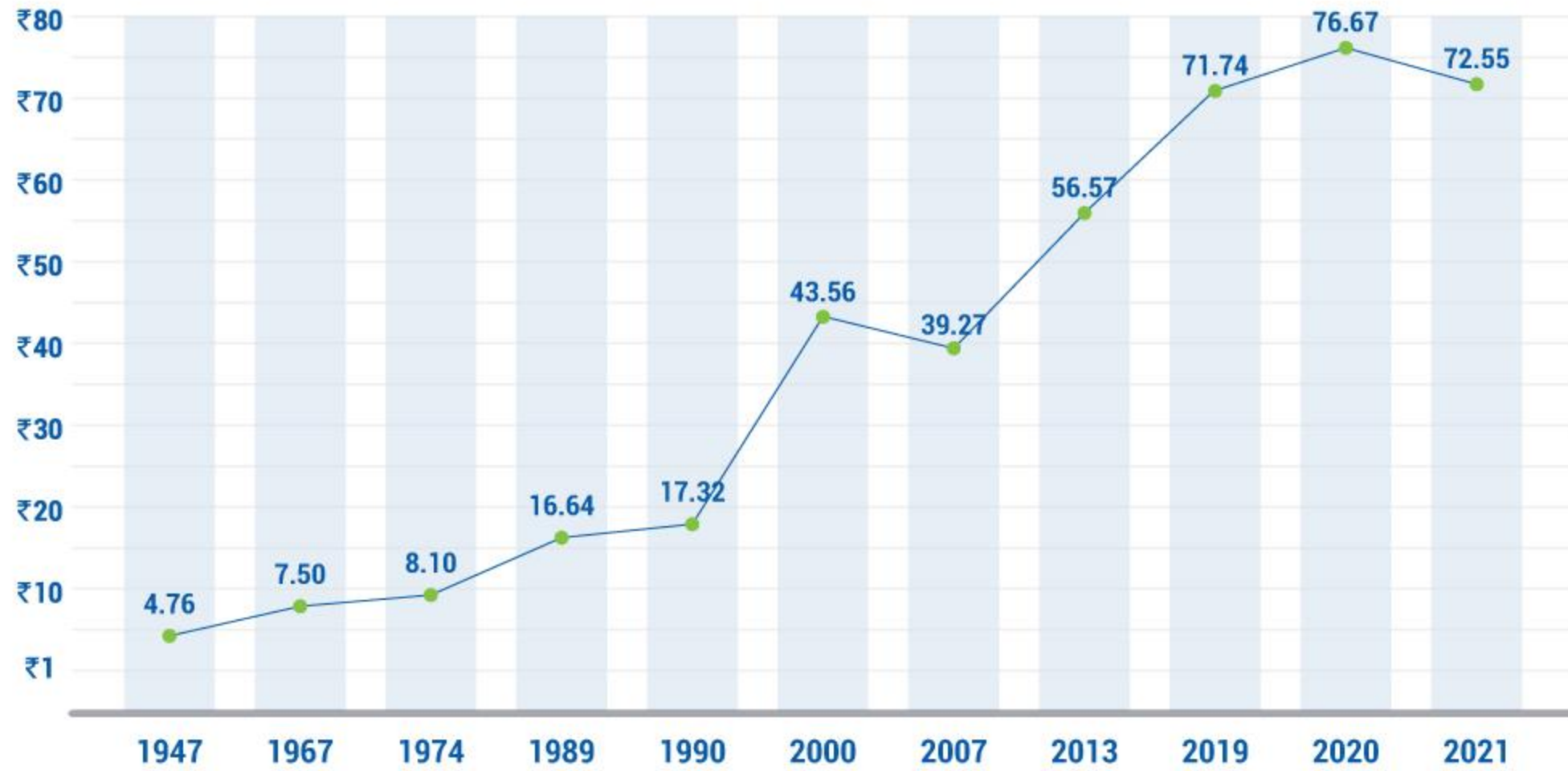
• 1 USD = 79.7802 INR Aug 25, 2022, 02:58 UTC

US Dollar to Indian Rupee

12H 1D 1W 1M 1Y 2Y 5Y **10Y**

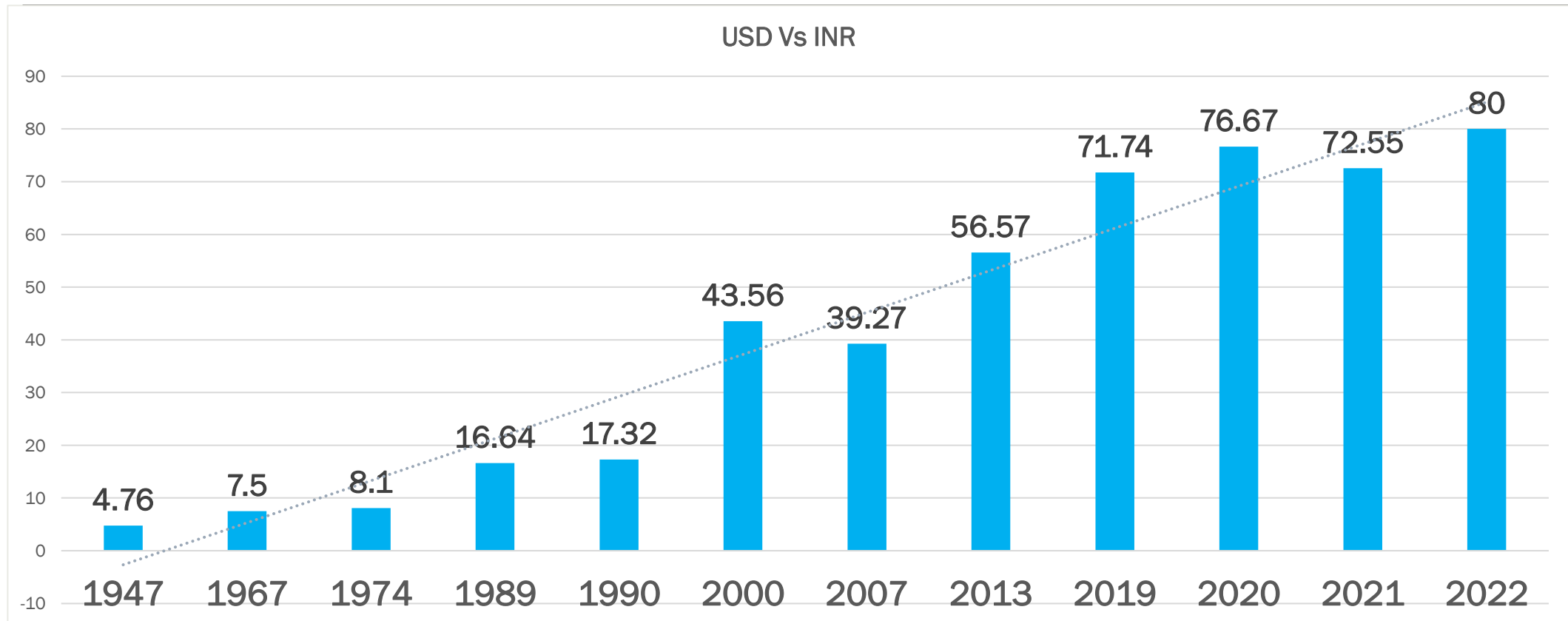


# 1 USD to INR Rates from 1947-2021



CAGR = 4%

# USD / INR Chart



# FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT

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Many businesses like to eliminate this uncertainty by locking in future exchange rates.

But some businesses regard exchange rate movements as a profit opportunity.



# FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT

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The simplest risk management strategy for reducing foreign exchange risk is to make and receive payments only in your own currency.

# FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT

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You might lose customers to competitors who offer more currency flexibility and your suppliers may be unwilling to accept payments in what is to them a foreign currency

So you may therefore find that competitive pressures force you to explore a risk management strategy that helps manage your foreign exchange risk more efficiently.

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# HEDGING CURRENCY RISK

**HEDGING CURRENCY RISK** : is a way for a company to minimize or eliminate **foreign exchange risk**.

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***Internal  
Techniques-within  
the business  
itself***

***External  
Techniques-  
involve dealing  
with a third party***

# Hedging Foreign Exchange Risk

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## **Internal Techniques:**

Leading and lagging  
Invoicing in domestic currency  
Netting

## **External Techniques:**

Forwards  
Futures  
Money Market Hedge  
Options

# Internal Techniques

**Leading and Lagging**-Leading means advancing a payment i. e. making a payment before it is due. Lagging involves postponing a payment i. e. delaying payment beyond its due date.

**Example: X Ltd imports \$1,00,000 goods from abroad**  
( current rate 1\$ =Rs 75)  
**Payable after 6 months**

**X :Ltd expects \$ to appreciate significantly in next 6 months . So X plans to pay the amount upfront**

# Internal Techniques

**Leading and Lagging**-Leading means advancing a payment i. e. making a payment before it is due. Lagging involves postponing a payment i. e. delaying payment beyond its due date.

For example an Indian Firm which is due to receive payments from its customer in the UK, may press for prompt payment from the customer if it expects the INR to appreciate in future

when this happens we say that the Indian firm is leading its receivables.

One pound = 102.5 → Rs 100

# Internal Techniques

**Invoicing in Domestic Currency- invoicing in domestic currency**, an exporter can shift transaction risk to his customer abroad

X Ltd invoices Rs75,000 for their exports (at the time of export 1\$ =Rs 75 )  
Payment receivable after 6 months

1\$ = Rs 70 after 6 months  
X receives Rs 75,000  
Importer has to pay \$ 1071.42 as against \$1000

$$\text{Rs } 75,000 / 70 = \$1071.42$$



# *Internal Techniques*

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**Netting**-Exposure **netting** is a method of hedging **currency risk** by offsetting exposure in one currency with exposure in the same or another currency.

**Example : X India Ltd owes \$1,00,000 to its group company X USA Ltd for the goods supplied and X USA Ltd also owes \$ 80,000 for the services provided to X India Ltd**

# *Internal Techniques*

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**Netting**-Exposure **netting** is a method of hedging **currency risk** by offsetting exposure in one currency with exposure in the same or another currency.

**Example : X India Ltd owes \$1,00,000 to its group company X UK Ltd for the goods supplied and X UK Ltd also owes £ 78000 for the services provided to X India Ltd ( 1\$ = £.78)**

## ***External Techniques-* Derivative Instruments**

**FORWARD  
CONTRACTS**

**FUTURES  
CONTRACTS**

**OPTION  
CONTRACTS**

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# Currency Forward Contract

# Forward Contract

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A forward contract is a **customized contract between two parties to buy or sell an asset at a specified price on a future date.**

A forward contract can be used for hedging or speculation, although its non-standardized nature makes it particularly apt for hedging.

# Forward Contract

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A currency forward is a customized, written contract between parties that sets a fixed foreign currency exchange rate for a transaction that will occur on a specified future date.

The future date for which the currency exchange rate is fixed is usually the date on which the two parties plan to conclude a buy/sell transaction of goods.

# FORWARD CONTRACT

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Thus, Salient features of Forward contract are:

1. Private deals b/w two parties to exchange cash in future
2. No cash flow at initiation of contract
3. Non-standardized contracts in self regulated forward market
4. Contract size and maturity period can be customized so it provides perfect hedge
5. Mostly interbank transactions traded over the counter

6. There is normally no insistence on margin as the bank and client know each other
7. High counter party risk which may lead to default

# Understanding Currency Forward Contracts

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Currency forward contracts are primarily utilized to hedge against currency exchange rate risk.

It protects the buyer or seller against unfavorable currency exchange rate occurrences that may arise between when a sale is contracted and when the sale is actually made.

However, parties that enter into a currency forward contract forego the potential benefit of exchange rate changes that may occur in their favor between contracting and closing a transaction.



# Example of Forward Contract

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A Ltd. of India has imported some chemical worth of USD 3,64,897 from one of the U.S. suppliers.

The amount is payable in six months time. The relevant spot and forward rates are:

Spot Rate  
BID \$1 = 74.2150  
ASK \$1 = 74.2250

Six Months forward rate  
BID \$1 = Rs74.324  
ASK \$1 = Rs 74.327

Forecasted Spot rates after six months  
BID \$1 = Rs74.720  
ASK \$1 = Rs 74.860

Should he hedge his forex exposure or leave it unhedged ?

# Solution

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Amount payable in  
USD 3,64,897 after  
six months

Six Months forward  
rate

BID \$1 = Rs74.324

ASK\$1= Rs 74.327

$\$3,64,897 \times 74.327$   
=Rs 2,71,21,699

# Solution

---

Forecasted Spot  
rates after six  
months

BID \$1 = Rs74.720  
ASK\$1= Rs 74.860

Amount payable if  
not hedged  
 $\$3,64,897 \times 74.860$   
Rs 2,73,16,189

# Solution

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OPTION 1 :  
HEDGED

Rs 2,71,21,699

OPTION 2 :  
UNHEDGED

Rs 2,73,16,189

OPTION 1 is  
better so take a  
forward cover

# Exercise

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XYZ Ltd. of India has imported some equipment worth of £ 5,00,000 from one of the UK. suppliers.

The amount is payable in six months time. The relevant spot and forward rates are:

Spot Rate  
BID £1 = 100.2150  
ASK £1 = 100.2250

Six Months forward rate  
BID £1 = Rs100.324  
ASK £1 = Rs 100.327

Spot rates after six months  
BID £1 = Rs100.720  
ASK £1 = Rs 100.860

Should he hedge his forex exposure or leave it unhedged ?

# Solution

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Amount payable in £  
5,00,000 after six  
months

Six Months forward  
rate  
BID £1 = Rs100.324  
ASK £1 = Rs 100.327

£ 5,00,000 X  
100.327 =  
Rs 5,01,63,500

# Solution

---

Spot rates after six months

BID \$1 = Rs100.720  
ASK\$1= Rs 100.860

Amount payable if not  
hedged £5,00,000X  
100.860  
Rs 5,04,30,000

# Outflow in rupee under both the options

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OPTION 1 :  
HEDGED

Rs 5,01,63,500

OPTION 2 :  
UHEDGED

Rs 5,04,30,000

OPTION 1 is  
better so take a  
forward cover



# Exercise

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*An Indian importer has to settle an import bill for \$ 1,30,000. The exporter has given the Indian exporter two options:*

*(i) Pay immediately without any interest charges*

*(ii) Pay after three months with interest at 5 percent per annum.*

*The importer's bank charges 15 percent per annum on overdrafts.*

*The exchange rates in the market are as follows:*

*Spot rate (Rs /\$) :  
74.35 /74.36*

*3-Months forward rate  
(Rs /\$) : 74.81 /74.83*

*The importer seeks your advice. Give your advice.*

# Solution

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If importer pays now, he will have to buy US\$ in Spot Market by availing overdraft facility. Accordingly, the outflow under this option will be

Amount required to purchase  
 $\$1,30,000 \times \text{Rs } 74.36 = 96,66,800,$

Add: Overdraft Interest for 3 months @15% p.a.  
=Rs 3,62,505

Total outflow = Rs  
1,00,29,305

Spot rate (Rs /\$) : 74.35 /74.36

# Solution

If importer makes payment after 3 months then, he will have to pay interest for 3 months @ 5% p.a. for 3 month along with the sum of import bill.

Accordingly, he will have to buy \$ in forward market. The outflow under this option will be as follows:

Amount of Bill = \$1,30,000  
Add: Interest for 3 months @5% p.a.= \$1625= Total \$ 1,31,625

Amount to be paid in Indian Rupee after 3 month under the forward purchase contract  
Rs 98,49,498  
US\$ 1,31,625 X Rs 74.83

Outflow  
option1 = Rs 1,00,29,305  
Option 2 =Rs 98,49,498

Since outflow of cash is least in (ii) option, it should be opted for.

*3-Months forward rate (Rs /\$) : 74.81 /74.83*

# Exercise

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XYZ Ltd. of India has exported some equipment worth of \$ 3,00,000 from one of the supplier.

The amount is receivable in six months time. The relevant spot and forward rates are:

Spot Rate  
BID \$1 = 76.2150  
ASK \$1 = 76.2250

Six Months forward rate  
BID \$1 = Rs77.324  
ASK \$1 = Rs 77.327

Expected Spot rates after six months  
BID \$1 = Rs76.124  
ASK \$1 = Rs 76.128

Should he hedge his forex exposure or leave it unhedged ?

# Solution

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Amount receivable  
\$ 3,00,000 after  
six months

Six Months forward  
rate

BID \$1 = Rs77.324

ASK \$1 = Rs 77.327

\$ 3,00,000 X  
77.324 =  
Rs2,31,97,200

# Solution

---

Expected Spot rates  
after six months

BID \$1 = Rs76.124

ASK\$1= Rs 76.128

Amount receivable  
if not hedged  
 $\$3,00,000 \times 76.124$   
Rs 2,28,37,200

# Inflow in rupee under both the options

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OPTION 1 :  
HEDGED

Rs 2,31,97,200

OPTION 2 :  
UHEDGED

Rs 2,28,37,200

OPTION 1 is  
better so take a  
forward cover

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# Currency Futures Contract



# CURRENCY FUTURES

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These are financial contracts that obligate the contracts' buyers to purchase an asset at a pre-agreed price on a specified future date.

Of the two parties, one agrees to buy (who takes long position) while other agrees to sell taking short position.

# CURRENCY FUTURES

## Future contracts are

- (i) standardized contracts
- (ii.) between two parties who do not necessarily know each other
- (iii) guaranteed for performance by an intermediary known as Stock Exchange

The exchange determines the size of the contract, price to be quoted, delivery location and limits on the amount by which the future price can move in any one day.

# CURRENCY FUTURES

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Future contracts are Settled on Mark to Market basis (MTM) and are cash settled  
Buyers and seller are required to deposit an initial margin which is around 5% of the value of the contract

In the futures market, margin refers to the initial deposit of "good faith" made into an account in order to enter into a futures contract.

# Currency Futures in India

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In India the stock exchange provides foreign exchange risk management The contracts available are:

Futures Contracts in  
USD-INR,

EUR-INR,

GBP-INR

and JPY-INR.

(maximum of 12  
monthly contracts)

To make the markets for  
USDINR futures deeper  
and more liquid, NSE has  
now launched weekly  
currency futures on the  
USDINR.

# Contract Size (Lot size )

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1000USD  
USDINR

1000 EURO  
EURINR

1000Pounds  
GBRINR

1,00,000  
Yens  
JPYINR

# Example on Hedging Using Currency Futures for Importer

XYZ is an Importer. On 15th Nov 2021, XYZ Limited wish to book its outwards remittance for 31st Dec 2021 worth \$100,000.

On 15<sup>th</sup> Nov  
\$ Futures is trading at  
74.60 (LTP)  
Expiry on 31<sup>st</sup> Dec

No of Contracts  
(100,000/\$1000): 100

Buy Currency Futures 100  
contracts at  
\$1= 74.60

Margin 3% = INR 2,23,800  
(74,60,000 \*3%)

What would be the cost to  
importer if on maturity RBI  
Reference rate is:  
a. 75.90  
b. 73.60

LTP : Last trading price

Spot rate on 15<sup>th</sup> Nov 1\$ =Rs 74.27

# Month End 31<sup>st</sup> Dec : Case 1

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Assume USD/INR  
**75.90** (RBI Ref  
Rate)

Cash Profit =  
 $(75.90 - 74.60) * 1,00,000$   
= INR 1,30,000

Margin will get  
released

Importer has to  
pay Rs 75,90,000  
on 31<sup>st</sup> Dec at spot  
rate

Net outflow = Rs  
75,90,000 -  
1,30,000 = Rs  
74,60,000

He is hedged and  
fixed his payment  
@74.60/\$

# Month End 31<sup>st</sup> Dec : Case 2

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Assume USD/INR  
**73.60** (RBI Ref  
Rate)

Loss: =  $(73.60 - 74.60) * 1,00,000$   
= INR 1,00,000

Margin will get  
released

Importer will pay  
Rs 73,60,000  
on 31<sup>st</sup> Dec at  
spot rate

Net outflow = Rs  
73,60,000  
+ 1,00,000 = Rs  
74,60,000

He is hedged and  
fixed his payment  
@74.60/\$



# Example on Hedging Using Currency Futures for Exporter

XYZ is an exporter. On 15th Nov 2021, XYZ Limited wish to book its inward remittance for 31<sup>st</sup> Dec. 2021 worth \$100,000.

\$ Futures is currently trading at 74.60  
Expiry on 31<sup>st</sup> Dec

No of Contracts  
(100,000/\$1000): 100

Sell Currency Futures 100 contracts at  
\$1= 74.60

Margin 3% = INR  
2,23,800 (74,60,000 \*3%)

What would be the cost to exporter if on maturity RBI Reference rate is:

- a. 73.10
- b. 75.60

Spot rate on 15<sup>th</sup> Dec , 1\$ =Rs 74.27

# Month End 31<sup>st</sup> Dec : Case 1

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Assume USD/INR  
**73.10** (RBI Ref  
Rate)

$$\begin{aligned}\text{Cash Profit} &= \\ & (73.10 - \\ & 74.60) * 1,00,000 \\ & = \text{INR } 1,50,000\end{aligned}$$

Margin will get  
released

Exporter will get  
Rs 73,10,000  
on 31<sup>st</sup> Dec at  
spot rate

$$\begin{aligned}\text{Net Receipts} &= \text{Rs} \\ & 73,10,000 + \\ & 1,50,000 = \text{Rs} \\ & 74,60,000\end{aligned}$$

He is hedged and  
fixed his receipts  
@74.60/\$

# Month End 31<sup>st</sup> Dec: Case 2

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Assume USD/INR  
**75.60** (RBI Ref  
Rate)

Loss: =  $(74.60 - 75.60) * 1,00,000$   
= INR 1,00,000

Margin will get  
released

Exporter will get  
Rs 75,60,000  
on 31<sup>st</sup> Dec at  
spot rate

Net Receipts = Rs  
75,60,000 -  
1,00,000 = Rs  
74,60,000

He is hedged and  
fixed his receipts  
@74.60/\$

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# Difference between Forward and Futures Contract

# Difference between Forward and Futures

| S.No. |                       | Forward                                | Future                                   |
|-------|-----------------------|--|--|
| 1     | Trading Location      | Over the Counter                       | Exchange Traded                          |
| 2.    | Regulation            | Self-Regulating                        | RBI, SEBI                                |
| 3.    | Frequency of delivery | Mostly by actual delivery              | Cash Settled                             |
| 4.    | Size of Contract      | Tailormade                             | Standardized                             |
| 5.    | Delivery Date         | Tailormade                             | Standardized                             |
| 6.    | Transaction Cost      | Bid-Ask Spread                         | Negotiated brokerage Fees                |
| 7.    | Margins               | Not required normally                  | Initial and Maintenance margins required |
| 8.    | Settlement            | On the Maturity Date by actual deliver | Daily on MTM basis, cash settled         |

# Cash flows under forward and Futures:

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Value of forward contract changes from the time the contract is entered to the time when it matures because the spot rate the time of contract and its maturity changes

Forward contracts are settled on maturity while futures contract are settled daily on MTM basis

Thus cash flows on forward contract are different from cash flows on futures contract

For example a forward and a futures contract on USD was entered by importer on date 1 (D1) to buy USD at exchange rate of USD/INR 74 for settlement on date 4.

Cash flows to forward and future transactions are shown as:

# Cash flows under forward and Futures:

## Cash flows of Forward Contract

| Date | Forward Rate (USD/INR) | Settlement price (USD/INR) | Cash Flows from Forward (INR) |
|------|------------------------|----------------------------|-------------------------------|
| D1   | 74.00                  | 72.00                      | 0                             |
| D2   | 74.00                  | 73.00                      | 0                             |
| D3   | 74.00                  | 75.00                      | 0                             |
| D4   | 74.00                  | 76.00                      | 76-74=2                       |

## Cash flows of Futures Contract

| Date | Forward Rate (USD/INR) | Settlement price (USD/INR) | Cash Flows from Forward (INR) |
|------|------------------------|----------------------------|-------------------------------|
| D1   | 74.00                  | 72.00                      | (2)                           |
| D2   | 72.00                  | 73.00                      | 1                             |
| D3   | 73.00                  | 75.00                      | 2                             |
| D4   | 75.00                  | 76.00                      | 1                             |

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THANKS