

## FOREIGN EXCHANGE ARITHMETIC

₹ € ¢ ₪ £ \$ ₹ ¥

### FOREIGN EXCHANGE ARITHMETIC

It is the process of **exchanging one currency for another**. These transactions occur on the **foreign exchange market (Forex market)**.

### FOREIGN EXCHANGE RATE

- **Exchange rates** denote the **price or the ratio or the value** at which one currency is exchanged for another currency.
- The **exchange rate is a dynamic rate**, which varies from day-to-day, minute-to-minute and second to second.

### Example

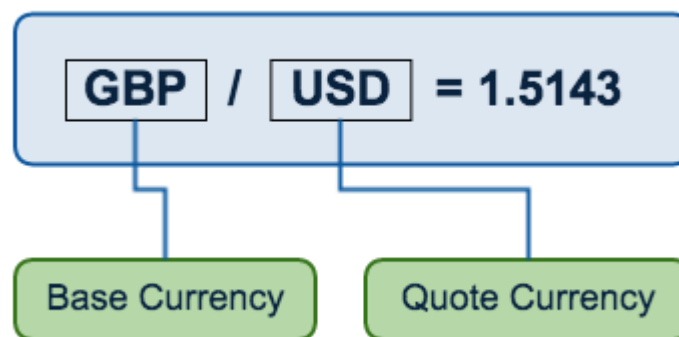
1 US dollar is equal to INR 76.10

1 Euro is equal to 1.19 US dollar

## IMPORTANT CONCEPTS IN FOREIGN EXCHANGE ARITHMETIC

### CURRENCY PAIR

- A currency pair is the **quotation of two different currencies**, with the value of **one currency being quoted against the other**.
- The **first listed currency** of a currency pair is called the **base currency**, and the **second currency** is called the **quote currency**.



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### Example

In this example base currency (GBP) is bought while the quote currency (USD) is sold.

### DIRECT QUOTATION

- Direct quotation refers to expressing the value of **one unit of a foreign currency in terms of the domestic currency.**
- it involves stating how much of a **home currency is required to obtain one unit of the Foreign currency.**

### Example

1 USD = 80.54 INR OR USD/INR=80.54

### INDIRECT QUOTATION

- Indirect quotation refers to expressing the value of **one unit of the domestic currency in terms of a foreign currency.**
- It involves stating how much of a **foreign currency is required to obtain one unit of the domestic currency.**

### Example

1 INR = 0.88 USD OR INR/USD=0.88

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### NOTE

In India home currency or domestic currency is Rupee and any currency other than Rupee is Foreign Currency.

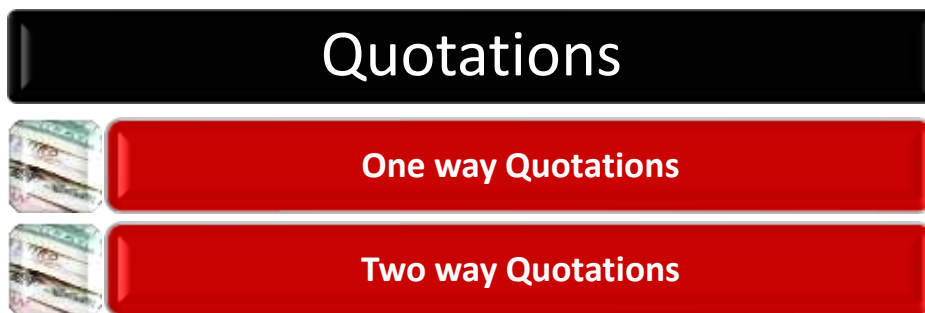
### BID RATE

Bid rate is a rate at which a **bank is ready to buy** one currency therefore bid Rate is **also known as Buying rate.**

### ASK/OFFER RATE

Ask rate is the at which **bank is ready to sell a foreign currency** therefore bid rate is also **known as selling rate.**

### QUOTATIONS OF FOREIGN CURRENCY



### ONE WAY QUOTATIONS

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A foreign exchange quote in which **only bid rate or offer rate** are shown and Currency is bought and sold on same rate.



### Two Way Quotations

A foreign exchange quote in which **both the bid and the offer** are shown i.e., one is the buying rate and the other is the selling rate.



**Q: 1An exporter in India manufactures and sells machinery to a buyer in the United States. The machinery has been shipped, and an export bill of \$10,000 is generated,**

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representing the payment due from the buyer in the USA. This transaction requires converting US dollars into Indian rupees, as the exporter operates in India and wants to receive payment in their local currency. An exporter in India has submitted an export bill of \$10,000 to a bank for conversion into Indian Rupees (INR). The current exchange rate is 1 USD = Rs.71.54/60. How much will the exporter receive in INR?

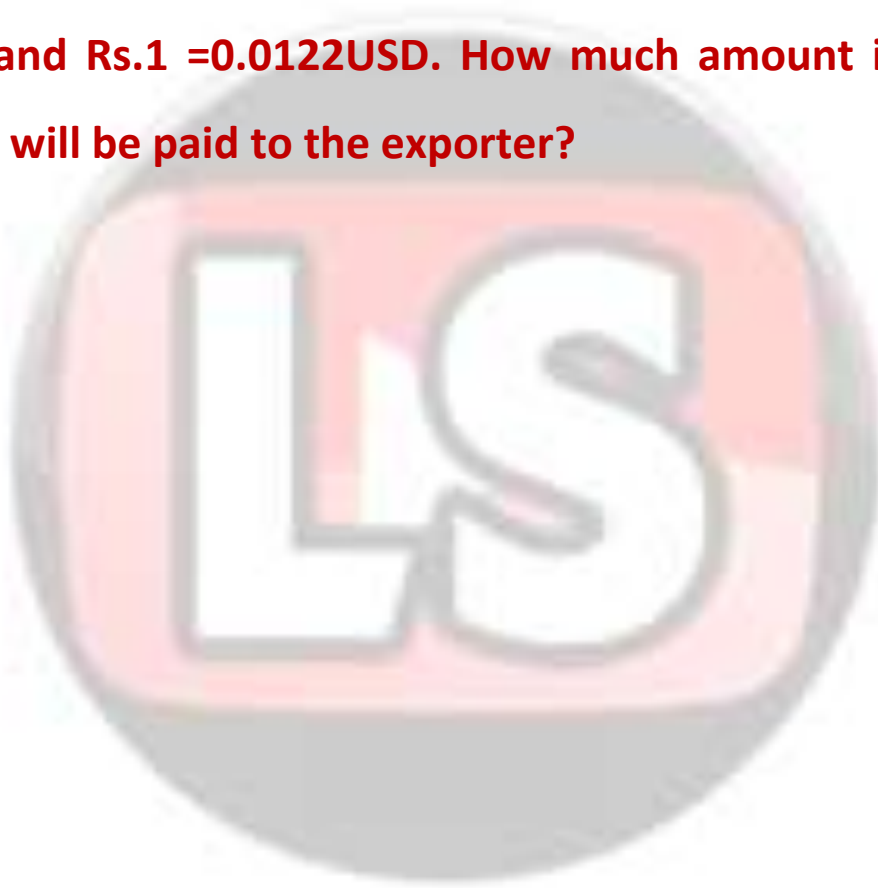
- a) 715400
- b) 815550
- c) 191555
- d) 202352

**Q: 2**An Indian exporter specializes in producing textiles and has secured a deal to sell them to a buyer in the United

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**States. The total value of the export is \$10,000, and an export bill is generated for this amount. Since the exporter operates in India, they need to convert the payment received in USD into Indian Rupees (INR) to facilitate their local operations and expenses. An exporter has submitted an export bill of \$ 10000 and  $\text{Rs.1} = 0.0122\text{USD}$ . How much amount in Indian Rupees will be paid to the exporter?**

- a) 810000
- b) 819672
- c) 820000
- d) 830000



**CROSS RATES**

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- Cross rates are primarily used when the **direct exchange rate between two currencies is not readily available** or not actively traded in the market.
- By using cross rates, market participants can **determine the relative value of one currency against another indirectly.**



**B wants to remit Euro. USD 1 = INR 76.10/20 and USD 1 = EUR 1.06/1.10. Find EUR/ INR.**

**In this example Euro and INR exchange rate is not given so with the help Cross rate we find Euro and INR Exchange rate.**

First, we buy USD with INR= USD 1 = INR 76.20

Then We buy Euro With USD= USD 1 = EUR 1.06

Now Euro1.06 = INR 76.20 and 1 Euro=76.20/1.06=71.88

**Note**



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Buying rate and selling rate taken according to the bank pointview.so when we buy USD then Bank is, Selling So we take selling rate (76.20) and when we are selling USD Bank is buying so we take buying rate (1.06).

**Q:1 A company based in Germany (Eurozone) is exporting machinery worth €500,000 to a company in India. The Indian company needs to pay in Indian Rupees (INR). To determine the payment amount in INR, we need to use the exchange rates provided. USD is available in Delhi at 1 USD = 75.54 Rupees. USD rate in London is 1USD=0.75 Euro. What will be the Euro/Rupee rate?**

- a) 99.277
- b) 100.72
- c) 102.75
- d) 104.75

**Q:2 A company in India needs to determine the exchange rate between the Euro and the Indian Rupee to convert a payment of €100,000 received from a European client. The given exchange rates are USD is available in Delhi at 1 USD = 75.54 Rupees. USD rate in London is 1EURO=0.90 USD What will be the Euro/Rupee rate?**

- a) 61.17
- b) 67.98
- c) 80.23
- d) 63.20

### **EXCHANGE RATE MECHANISM**

**The delivery of FX deals can be settled in one or more of the following ways:**

**READY OR CASH RATE**

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When Settlement of **funds takes place on the same day**.it is settled on Ready or cash rate.

### **Example**

If the date of Ready/ Cash deal is 15<sup>th</sup> October 2022 (Monday), settlement date will also be 15 October 2022.

### **TOM RATE**

Settlement of funds takes place on the **next working day of the date of the deal**. it is settled on Tom rate.

### **Example**

If the date of TOM deal was 5 October 2022, settlement date would be 6 October 2022.

### **SPOT RATE**

- Settlement of funds takes place on the **second working day after/ following the date of contract/deal**,

### **Example**

If the date of Spot deal is 5 October 2022 (Monday), settlement date will be 7 October 2009.

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### FORWARD RATE

If Delivery of funds takes place on **any day after Spot date the deal is settled on forward rate.**

### Example

If the date of forward deal is 5 October 2022 (Monday), for value settlement date 30 October 2022 or 30 November 2022, it is a

Date of Contract	Delivery Date	Rate to be used
29/09/2020	29/09/2020	1: cash rate/ ready rate
29/09/2020	30/09/2020	2: tom rate
29/09/2020	01/10/2020	3: spot rate
29/09/2020	15/10/2020	4: forward rate

forward deal.

### FORWARD MARGINS/ POINTS - PREMIUM AND DISCOUNTS

### FORWARD MARGINS/ POINTS

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In foreign exchange markets, forward points refer to the **pricing differentials between the spot exchange rate and the forward exchange rate.**

### Example

Let's say you want to exchange US dollars (USD) for British pounds (GBP) in three months using a forward contract. The current spot exchange rate is 1 USD = 0.75 GBP. However, when you inquire about the forward exchange rate, you are quoted a rate of 1 USD = 0.72 GBP. This means there is a forward margin of 0.03 GBP (0.75 - 0.72).

### PREMIUM

If the **forward exchange rate** for a currency is **more than the spot rate** it is said to be at a premium.

### Example

- Spot rate USD/INR=80.50
  - Forward Rate USD/INR=81.50
- 1=Premium

### DISCOUNT

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If the **forward exchange rate** is less than the **spot rate** it is said to be at a **discount**.

- Spot rate USD/INR=82.50
  - Forward Rate, USD/INR=81.50
- 1=Discount

## CALCULATION OF FORWARD RATE THROUGH FORWARD DIFFERENTIALS.

### PREMIUM

Forward rate = Spot rate + Forward differentials

### Example

USD/INR=80.50/60 and 1-month Forward differentials 60-70

Forward Rate =81.10/81.30

### Discount

Forward rate = Spot rate - Forward differentials

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### Example

USD/INR=80.50/60 and 1-month Forward differentials 40-30

Forward Rate=80.10/80.30

**Q: 1 Spot Euro = USD 1.3230/50. Two-month forward points 40-80. Two-month USD can be purchased at by bank at which rate.**

- a) Euro 1 = USD 1.3235
- b) Euro 1 = USD 1.3270
- c) Euro 1 = USD 1.3160
- d) Euro 1 = USD 1.3140

**Q: 2 If spot rate Euro 1 = USD 1.3350 /60, one month forward = 25-20, 2 month forward = 30-25 and 3 months forward = 10-30. what is 3 months offer rate (selling rate)?**

- a) Euro 1 = USD 1.3240

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b) Euro 1 = USD 1.3330

c) Euro 1 = USD 1.3200

d) Euro 1 = USD 1.3180

**Q:3 If spot exchange rate USD/Euro = 1.5620, interest rate differential = 4% p.a., forward period = 90 days calculate the forward points by taking a year = 360 days.**

a) 0.01562

b) 0.02356

c) 0.04581

d) 0.02361

**Solution**

Spot rate X Interest Rate Differential X Forward Period

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100 X No. of days in a year



## **ARBITRAGE**

Arbitrage is an **investment strategy** in which an **investor simultaneously buys and sells an asset in different markets** to take advantage of a **price difference and generate a profit.**

## **CASE STUDY ON ARBITRAGE**

You have identified an arbitrage opportunity between two cryptocurrency exchanges, Exchange A and Exchange B, for XYZ coin. The current market prices are: **Exchange A: 1 XYZ coin = \$10**  
**Exchange B: 1 XYZ coin = \$12.** You decide to capitalize on this opportunity. If you buy 100 XYZ coins on Exchange A and sell them on Exchange B, what is the total profit you will make from this arbitrage transaction?

- a) \$100
- b) \$200
- c) \$300

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d) \$400



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