INTERNATIONAL FINANCIAL MANAGEMENT

EXCHANGE RATE

Bid | Buy rate — Bank buys, Customer sells

Ask | Sale | offer rate — Bank sells, Customer buys

· 45.5 | 46.15 (BR | AR) BR < AR.

· BR − AR = Spread (Banks profit)

· Spread (%) = $\frac{AR-BR}{AR} \times 100$

SPOT RATE and FORWARD RATE

SR = Buy or sell TODAY

FR = Buy or sell @ LATER date @ price fixed today.

FR can be expressed as

a) outright : 45.01 | 45.16 Rs/$

b) swap points : 0.10 | 0.30 or 0.30 | 0.10.

FR = SR + swap points ↑ trend

= SR − swap points ↓ trend

Fwd premium | disc for IDQ.

$= \frac{FR-SR}{SR^{*}} \times 100 \times \frac{12}{n}$

For DQ.

$= \frac{FR-SR}{FR^{*}} \times 100 \times \frac{12}{n}$

if BR | AR given find mean BR+AR/2 for FR & SR.

DIRECT & INDIRECT QUOTE

IDQ – expressed in terms of 1 unit

45 Rs/$ (mean rate)

Rs → DQ $ → IDQ [1 $]

DQ & IDQ relationship

(a) when mean rate is given (only) NO BR or AR.

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

$45\ Rs/\$ = \frac{1}{45}\ \$/Rs$

(b) when BR & AR are given

$BR(DQ) = \frac{1}{AR}(IDQ)$

$AR(DQ) = \frac{1}{BR}(IDQ)$

(opposite)

OPTION FORWARD

· When the time of receipt or payment of foreign currency is uncertain – the bank quotes the rate which beneficial to the Bank. (Buy cheap, sell exp.) @ option of bank.

★ eg: sometimes during 3m. Bank quotes 2m or 3m whichever is beneficial. (3m start) (2m end)

Read Q carefully and think from Banks angle.

TOOLS OF HEDGING

Forward market | Money market | Option/derivative mkt.

Party exposed to FOREX risk will analyse.

CROSS RATE/DERIVED RATE

BR = BR × BR AR = AR × AR.

· Rs/P €/$ $/P

$Rs/€ = \frac{Rs}{P} \times \frac{\$}{€} \times \frac{P}{\$}$

eliminate extra currencies.

Stronger currencies. BR ≮ AR.

Rs	$	$
Rs	Pound	Pound
$	¥	$
Pound	$	Pound

Strong - IDQ.

FORWARD MARKET HEDGING

I] whether to take Forward cover or leave unhedged.

@ day of transaction.

Compare FR & Exp SR

payments ↓ receip ↑

II] if forward cover is taken it is VIABLE or not.

on maturity date

Compare FR & current SR. actual SR.

hedging loss if forward cover not taken compare ESR & actual SR

Tax rate given: tax impact on forex gain | loss = compare FR & SR.
OF CIF

CURRENCY A...

IDQ direct

appreciates – (+)

depreciates – (−)

DQ inverse

appreciates – (−)

dep – (+)

· always think fro... IDQ currency

· do unitary met...

· all options must be comparable wrt time.

(add | ~~less~~ int [loan or invst])

MONEY MARKET HEDGING

FC receipt (do opposite transactions)

100 — 0 year — receipt - take loan

Take $ loan

P + I = 100

$P + \left(P \times 3\% \times \frac{n}{12}\right) = 100$

P = x $

convert x $ to own currency (Rs) and invest for n.

nth time

Receive 100 $
Pay 100 $ (loan)
—

Receive mat of invst in Rs.
P + 4% for n/12
= y Rs

tax rate : int (net of tax) *

FC payment — payment - make invest

0 year:

invest in $ so that
P + I = 100.
P = x $

take loan in Rs = x $ @ SR.

n time

Receive 100 (invst)
Pay 100
—

Pay Re loan + int for n/12
= y Rs

LEADING: Paying in advance so as to get discount and avoid foren fluct^n.

discount to be given = int earned by supplier.

disc = int for n/12 in foren currency in foreing country

100 $ - disc $ = Net 90 $ payable @ SR in Rs.

for comparision : add notional/opp cost of int (of Rs) for n months (for comp with forward, mm etc)

Leading with forward after 3m.

eg: order + 3m delivery + 3m payment (lead xp)

∴ 90 $ pay after 3m → take forward cover i.e. y Rs + int for 3m (Rs)* comparision

Leading with MM.

FR(app) = net 90 $ and do mm hedgeing invest in $ (3m) + take loan (0 year) (6m)

3m = receive invst pay 90 $.

6m = int + P of loan for 6m (to make comparable)

Leading with forward and money mkt:

0 year

After 3m
Pay 90 $ after 3m.
~~if receipt~~ Receipt 90 $ after 3m

3 year

After 6m
take 90 $ loan in Rs for 3m.
@ FR (6m)
invst for 3m - mat - 6m FR

OPTION MARKET Hedging

eg:- Rs/$ we receive $

Call — Right to buy
Call op^n on Rs
Buy Rs, sell $

Put — Right to sell
Put op^n on $
sell $, Buy Rs.

premium : expense for writer.
pd in 0 year on % of exposure (foren) (SR)

n/3m

Rs (app) — Rs = — Rs (dep)

find receipts in all op^n.

cost of call/put = premium pd + opp int on premium + purchase cost (SO/EP)

Covered int arbitage.

if markets are in equilibrium.

$i_a = i_b + F_p$ or $i_b - F_d$ (premium/disc)

If markets are not in equilibrium. Rs/$

$i_a > i_b + F_p$ or $i_b - F_d$
Invest i_a → PQ
Borrow i_b → IDQ

borrow - cheap ↓IR
invt - ↑IR

$i_a < i_b + F_p$ or $i_b - F_d$.
invest IDQ → i_b
borrow DQ → i_a

Currency	Prin	I	Total	Total ($)
Borrow $	1000 $	x	P + I	1010 $ (COF)
Invst Rs	1000 $ = 50000 Rs	50K × I	55000	convert at FR CIF 1020 $

must be same

| | | | | 10 $ |

range of int : assume x% int rate find range.

arbitage gain per 1000 $.

INTEREST Rate Parity theorem (IRP)

investors are indiff as to invst in any country irresp of diff int rate.

Δ IR = forward premium or forw. disc.

$$i_A - i_B = \frac{F_0 - S_0}{S_0} \times 100 \times \frac{12}{n}$$

$$\frac{i_A - i_B}{1+i_B} = \frac{F_0 - S_0}{S_0}$$

$$\frac{1+i_A}{1+i_B} = \frac{F_0}{S_0}$$

i_A = DR int, i_B = IDR int — adj int for forward period

int ↑ – discount
↓ – premium

Purchasing Power Parity theorem

price of commodity is same irresp of place we buy.

Δ inflation = Δ in SR.

absolute version = price \$ = price (Rs) = price (¥) when expressed in 1 currency

\$ = Rs × \$/Rs = ¥ × \$/¥

(Relative version)

$$\frac{P_A - P_B}{1+P_B} = \frac{S_T - S_0}{S_0}$$

$$\frac{1+P_A}{1+P_B} = \frac{S_T}{S_0}$$

P_A = DR infln (%)
P_B = IDR infln (%)
S_T = exp spot

Expected theory of forwards.

F_0 = exp S_0 (S_T)

$F_0 > S_T$ — sell F_0 buy @ S_T, then $F_0 = S_T$

$F_0 < S_T$ — Buy F_0 sell S_T, $F_0 = S_T$

$$\frac{F_0 - S_0}{S_0} = \frac{S_T - S_0}{S_0}$$

$$\frac{F_0}{S_0} = \frac{S_T}{S_0}$$

Fischers int rate theorem / Fischers effect (FM-②)

real rate + infln = nominal rate

(1+RR)(1+IR) = (1+NR)

Δ inflation = Δ nominal rate / mkt/money rate

$$\frac{P_A - P_B}{1+P_B} = \frac{i_A - i_B}{1+i_B}$$

$$\frac{1+P_A}{1+P_B} = \frac{1+i_A}{1+i_B}$$

$$\frac{i_A - i_B}{1+i_B} = \frac{P_A - P_B}{1+P_B} = \frac{F_0 - S_0}{S_0} = \frac{S_T - S_0}{S_0}$$

Δ int = Δ infln = Δ F_0 & S_0 = Δ S_T & S_0.

$$\frac{1+i_A}{1+i_B} = \frac{1+P_A}{1+P_B} = \frac{F_0}{S_0} = \frac{S_T}{S_0}$$

International capital Budgeting.

Method I

convert CF in FC to home currency

0 year — SR
1-n — exp spot / forward rate.

PV = COC or ROR in home currency (Rs).

NPV = Rs.

Method II

convert NPV (FC) in home currency.

PV = ROR of FC (\$) → IRP

NPV = \$ convert @ SR.

(fast ✓)

NPV = both opn is same.

Arbitrage currencies.

do arbitrage condition. BR < derived AR.

derived AR = derived using cross rate.

start from DR.

3 point

sell Rs (100) Buy \$
sell \$ Buy £
sell £ Buy Rs (103)

3 - A.G.

4 point.

sell Rs (100) Buy \$
sell \$ Buy £
sell £ Buy €
sell € Buy Rs 103

3 - A.G

Cancellation of forward contract

do opposite transac maturing on same day.

1) 0 ~~Cat~~ 3m fwd buy / 3m fwd sell.
2) 2m cancel 1m fwd sell / 1m fwd buy

Int on cancellation

loss – 15% p.a (1 & 2)
profit – 12% p.a.

Swap chg for ext

loss – COF (2 & 3)
profit CIF

extension of fwd contract

date	Par	Amt	date o m.
1) Mar	2m fwd sell.	x	May
2) May	spot buy	y 4P	may.
3) May	1m fwd sell		June.

cancel old (opposite spot) + bal new c t.

wholesale

Bank & AD deal with each other.

Interbank rate (IBR)

retail.

Bank + AD → customer.

IBR − com = BR

IBR + com = AR