AFM

Week 6 Assignment

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AFM Week 6 Assignment Question and Answer

Question

The following quotations are available

Foreign exchange rates:

Spot	$1.4692 – 1.4735/£1
3 month forward	$1.4632 – 1.4668/£1

Currency option prices

Contract size £31,250, (Exercise price quotations in US$ per £1 and premiums are in cents per £1)

Exercise Price	*CALLS*		*PUTS*	
	1- month expiry	*4 - month expiry*	*1- month expiry*	*4 - month expiry*
1.450	2.95	3.12	1.48	1.56
1.460	2.45	2.55	1.85	1.99

Assume that futures and options contracts mature at the month end and that there is no basis risk. If the full amount cannot be hedged using an exact number of contracts, the balance is hedged using the forward market

Required

Advise on and recommend an appropriate hedging strategy for:

i. A company based in the UK that needs to make a payment of $2.15 million to a US customer in 3 months' time.

ii. A company based in the US that needs to make a payment of £3.25 million to a UK customer in 3 months' time.

Answer

A UK based company

A payment of $2.15 million dollars is due in three months' time.

Hedging with a forward contract

Sterling cost of buying $2.15 million with a 3-month forward contract:

= $2,150,000 / 1.4632 = **£1,469,382**. This is legally binding

Hedging with currency options

1 *Set up the hedge*

Calls or puts:

Buying $s and selling £s (contract currency) **Buy 4 months expiry £ Puts**

At an exercise price of $1.45 = £1

Payment = $2,150,000 / 1.45 = £1,482,758

Number of contracts = £1,482,758 / £31,250 = 47.4 contracts approximately **47 contracts**

Total payment with 47 contracts = 47 x £31,250 = £1,468,750

Premium $0.0156 x £31,250 x 47 contracts = $22,912.50

Sterling cost of premium (assumed paid upfront) = $22,912.50 / 1.4692 = £15,595

Amount unhedged ($2,150,000 – (47 x £31,250 x $1.45) = $20,312.50

This amount could be bought 3 months forward: Sterling cost $20,312.50 / 1.4632 = £13,882

Total cost = £1,468,750 + £15,595 + £13,882 = **£1,498,227**

At an exercise price of $1.46 = £1

Payment = $2,150,000 / 1.46 = £1,472,603

Number of contracts = £1,472,603 / £31,250 = 47.12 contracts approximately **47 contracts**

Total payment with 47 contracts = 47 x £31,250 = £1,468,750

Premium $0.0199 x £31,250 x 47 contracts = $29,228

Sterling cost of premium (assumed paid upfront) = $29,229 / 1.4692 = £19,894

Amount unhedged ($2,150,000 – (47 x £31,250 x $1.46) = $5,625

This amount could be bought 3 months forward: Sterling cost $5,625 / 1.4632 = £3,844

Total cost = £1,468,750 + £19,894 + £3,844 = **£1,492,488**

The UK company should use the forward market as this offers the lowest of £1,469,382.

(ii)

US Based company

Hedging with a forward contract

US dollar cost of buying £3.25 million with a 3-month forward contract:

= **£3.25m** x $1.4668 = **$4,767,100**. This is legally binding

Options

Hedging with currency options

1 *Set up the hedge*

Calls or puts:

Buying £ (contract currency) and selling $s **Buy 4 months expiry £ Calls**

At an exercise price of $1.45 = £1

Number of contracts = £3,250,000 / £31,250 = 104 **contracts**

Payment with 104 contracts = 104 x £31,250 x $1.45 = $4,712,500

Premium $0.0312 x £31,250 x 104 contracts = $101,400

Total cost = $4,712,500 + $101,400 = **$4,813,900**

At an exercise price of $1.46 = £1

Number of contracts = £3,250,000 / £31,250 = 104 **contracts**

Payment with 104 contracts = 104 x £31,250 x $1.46 = $4,745,000

Premium $0.0255 x £31,250 x 104 contracts = $82,875

Total cost = $4,745,000 + $82,875 = **$4,827,875**

The US company should use the forward market as this offers the lowest cost of $4,767,100.

The forward contract is relatively simple to arrange. It will not also involve the payment of a large premium upfront unlike the option which makes the options relatively expensive. However, the forward contract is legally binding and has to be fulfilled even if the transaction which led to the forward contract being purchased is cancelled. Unlike the options, it does not allow the holder to take advantage of favourable exchange rate movements