Problem Set 1

Joe White
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Problem 1.

(a) $E_{\$/\text{mali}} = 56.2$, then

$$E_{\text{mali}/\$}(\$200{,}000) = \left(\frac{1}{56.2}\right)(\$200{,}000) = 3{,}558.72 \text{ mali.}$$

(b) $F_{\$/\text{mali}} = 58.4$, then

$$F_{\text{mali}/\$}(\$50{,}000) + E_{\text{mali}/\$}(\$150{,}000) = \left(\frac{1}{58.4}\right)(\$50{,}000) + \left(\frac{1}{56.2}\right)(\$150{,}000) = 3{,}525.20 \text{ mali.}$$

(c) Call option with strike $K = 52.8$. Since

$$E_{\$/\text{mali}} = 56.2 > K = 52.8,$$

we don't use the option all dollars are purchased at the spot rate:

$$\text{mali needed} = E_{\text{mali}/\$}(\$200{,}000) = \left(\frac{1}{56.2}\right)(\$200{,}000) = 3{,}558.72 \text{ mali.}$$

Problem 2.
Given:
$$E_{\text{yen}/\$} = 95, \qquad E_{\text{peso}/\$} = 3.2.$$
Then
$$E_{\yen/\text{peso}} = (E_{\yen/\$})(E_{\$/\text{peso}}) = (95)(\frac{1}{3.2}) = 29.6875$$

Problem 3.
Given:
$$S_{\$/\pounds} = 1.95, \qquad F_{\$/\pounds} = 1.90, \qquad S_{\$/\pounds}^{\text{3mo}} = 1.92,$$
with a contract size of £1,000,000.

(a) Since the expected future spot rate exceeds the forward rate,

$$S_{\$/\pounds}^{\text{3mo}} > F_{\$/\pounds},$$

the investor should take a long position in pounds (buy pounds forward).

(b) Expected profit from the forward position is

$$\Pi = \left(S_{\$/£}^{3\text{mo}} - F_{\$/£}\right)(£1{,}000{,}000) = (1.92 - 1.90)(1{,}000{,}000) = \$20{,}000.$$

(c) If the realized future spot rate is $S_{\$/£}^{3\text{mo}} = 1.86$, profit is

$$\Pi = \left(S_{\$/£}^{3\text{mo}} - F_{\$/£}\right)(£1{,}000{,}000) = (1.86 - 1.90)(1{,}000{,}000) = -\$40{,}000.$$

Problem 4.

Given bid–ask spot rates for dollars per yen:

$$S_{\$/\text{jpy}}^{\text{bid}} = 0.080, \qquad S_{\$/\text{jpy}}^{\text{ask}} = 0.085.$$

(a) A Japanese exporter converting \$50,000 into yen must buy yen at the ask rate:

$$= \frac{\$50{,}000}{0.085} = 588{,}235.29 \text{ yen.}$$

(b) A U.S. firm that must immediately pay 100,000 yen also buys yen at the ask rate:

$$= (0.085)(100{,}000) = \$8{,}500.$$