FINM 37300: Homework 1

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1.

a)

We need to know the spot rate of USD to GBP.

b)

Let the spot rate be 0.75 GBP/USD:

$$(0.55\text{ GBP} - 0.53\text{ GBP}) \times 100\text{million} = 2\text{million GBP}$$
$$\therefore \frac{2\text{million GBP}}{0.75\text{ GBP/USD}} = 2.67\text{million USD}$$

2.

$$\begin{aligned} S_t \frac{P^f}{P^d} &= S_t \left(\frac{e^{-0.0065(0.75)}}{e^{-0.0115(0.75)}} \right) \\ &= 1.12 e^{(0.0115-0.0065)0.75} \\ &= 1.124208 \end{aligned}$$

3.

$$1.39 = 1.41 \frac{P^f}{e^{-0.002 \times 0.40}}$$
$$\frac{1.39}{1.41} e^{-0.0008} = e^{-r_f(0.40)}$$

$$r_f = \frac{\log\left(\frac{1.39}{1.41}\right) - 0.0008}{-0.40}$$
$$= 0.03771$$

4.

$$F_t = S_t e^{(r_d - r_f)/2}$$
$$\log(F_t) = \log(S_t) + (r_d - r_f)/2$$
$$\log(F_t/S_t) = (r_d - r_f)/2$$
$$\therefore \text{SD}(\log(F_t)) = \sqrt{0.11^2 + \left(\frac{1}{2}\right)^2 (0.009^2 + 0.012^2)} = 0.1102554$$
$$\text{SD}(\log(F_t/S_t)) = \sqrt{\left(\frac{1}{2}\right)^2 (0.009^2 + 0.012^2)} = 0.0075$$