Problem set 1 - Answer key

1. (a) July 18, 2006: \( E_{HK}^{$/HK} = \frac{1}{0.78} = 0.1285 \) July 18, 2007: \( E_{HK}^{$/HK} = \frac{1}{0.75} = 0.1279 \)
(b) July 18, 2006: \( E_{L/£} = \frac{1}{0.77} = 1.852 \) July 18, 2007: \( E_{L/£} = \frac{1}{0.75} = 2.0408 \)
(c) July 18, 2006: \( E_{€/€} = \frac{1}{0.80} = 1.25 \) July 18, 2007: \( E_{€/€} = \frac{1}{0.75} = 1.39 \)
(d) US$ against HK$
\[ \frac{\Delta E_{HK}^{$/HK}}{E_{HK}^{$/HK}} = \left( \frac{0.1279 - 0.1285}{0.1285} \right) \times 100 = -0.47\% \]
that is, the US dollar has appreciated against the HK dollar.

US$ against British £
\[ \frac{\Delta E_{L/£}}{E_{L/£}} = \left( \frac{2.0408 - 1.852}{1.852} \right) \times 100 = 10.19\% \]
that is, the US dollar has depreciated against the British pound.

US$ against €
\[ \frac{\Delta E_{€/€}}{E_{€/€}} = \left( \frac{1.39 - 1.25}{1.25} \right) \times 100 = 11.11\% \]
that is, the US dollar has depreciated against the euro.
(e) To answer this question, we will use the cross rate formula:
\[ E_{Y/CS} = E_{Y/€} \frac{1}{E_{CS/€}} = 122 \frac{1}{1.04} = 117.31, \]
yen per Canadian dollar.

2. (a) If you put your money in the US: $5,000 \times (1.04)^3 = $5,624.32
If you put your money in Thailand: $5,000 \times 3.34 \times (1.15)^3 \times \frac{1}{0.78} = $5,291.38
Therefore, you should put your money in the US, since the difference in interest rates does not make up for the depreciation of the Baht with respect to the US dollar.

(b) Now you are investing for only 4 months. Notice that interest rates are for an annual frequency.
In this case, if you put your money in the US, after 4 months you get $5,000 \times 0.92 \times (1.04)^{\frac{4}{12}} \times \frac{1}{0.78} = $5,019.34.
In this case, you should also put your money in the US.

3. (a) Assuming that UIP holds, we have
\[ i_{Rupee} = i_{$} + \frac{E_{Rupee/€}}{E_{Rupee/€}} - 1, \]
from this equation we can obtain the spot exchange rate between the Rupee and the US dollar:
\[ E_{Rupee/€} = \frac{E_{Rupee/€}}{i_{Rupee} - i_{$} + 1}, \]
given the data we have, we obtain
\[ E_{Rupee/€} = \frac{E_{Rupee/€}}{i_{Rupee} - i_{$} + 1} = \frac{40.4}{0.04 - 0.05 + 1} = 40.81 \text{Rupees/€}, \]
(b) If \( E_{Rupee/€} = 46.7 \), then using the same formula as above, we have \( E_{Rupee/€} = 47.17 \). That is, if people expect the Rupee to depreciate against the US dollar, then the spot exchange rate is higher.
(c) If \( i_{Rupee} = 6.5\% \) then we have
\[ E_{Rupee/€} = \frac{E_{Rupee/€}}{i_{Rupee} - i_{$} + 1} = \frac{46.7}{0.065 - 0.05 + 1} = 46.47 \text{Rupees/€}, \]
that is, the Rupee appreciates against the US dollar.
(d) If there is no risk and CIP holds, then we know that \( F = E^c = 46.7 \text{ Rupees per $} \).