Foreign Exchange Markets and Rates of Return

Section 1

1a. importers and exporters; or traders
b. investors
c. rate of return
d. liquidity
e. risk
f. maximize rate of return, minimize risk, manage liquidity
g. [(6.5 – 5.5)/5.5] x 100 = +18.2%
h. [(600 – 650)/650] x 100 = -7.7%

Section 2

1a. appreciation
b. peso value
c. depreciation
d. arbitrage
e. forward exchange rate
f. spot exchange rate
g. hedging

2.

a) The rate of change of the euro value relative to the dollar is the percentage change in $E_{\$/€}$, the dollar/euro exchange rate, between Feb 2003 and Feb 2004.
% change $E_{\$/€}$ = (1.25 - 1.08)/1.08 = 0.1574 x 100 = + 15.74 %
Since this is positive it represents an appreciation of the euro (relative to the dollar) by 15.74%

b) The rate of change of the dollar value relative to the euro is the percentage change in $E_{€/\$}$, the euro/dollar exchange rate, between Feb 2003 and Feb 2004. Here one must use reciprocals of the dollar/euro rates given.
% change $E_{€/\$}$ = [(1/1.25) - (1/1.08)]/ (1/1.08) = -0.136 x 100 = - 13.6 %
Since this is negative it represents a depreciation of the dollar (relative to the euro) by 13.6%

c) The rate of change of the dollar value relative to the rand is the percentage change in $E_{R/\$}$, the rand/dollar exchange rate, between Feb 2003 and Feb 2004.
% change $E_{R/\$}$ = (6.95 - 8.55)/8.55 = -0.1871 x 100 = - 18.71 %
Since this is negative it represents a depreciation of the dollar (relative to the rand) by 18.71%

d) The expected rate of change of the dollar value relative to the euro is the percentage change in $E_{€/\$}$, the euro/dollar exchange rate, using the forward exchange rate for Feb 2005 and the current exchange rate for Feb 2004. Again one must convert using reciprocals.
Expected % change $E_{€/\$} = [(1/1.24) - (1/1.25)]/(1/1.25) = 0.0081 \times 100 = +.81\%$
Since this is positive it represents an expected appreciation of the dollar (relative to the euro) by 0.81%

e) The expected rate of change of the dollar value relative to the rand is the percentage change in $E_{R/\$}$, the rand/dollar exchange rate, using the forward exchange rate for Feb 2005 and the current exchange rate for Feb 2004.
Expected % change $E_{R/\$} = (7.42 - 6.95)/6.95 = 0.0676 \times 100 = +6.76\%$
Since this is positive it represents an expected appreciation of the dollar (relative to the rand) by 6.67 %

Section 3

1a. the spot exchange rate, the expected future exchange rate, and the foreign interest rate
b. 3%
c. expected exchange rate
d. certificate of deposit (CD)

Section 4

1.

a) $RoR_{A\$} = 0.04 + (1 + 0.04)^* \{[(1/1.90) – (1/1.80)]/(1/1.80)\} = -0.0147$ or about – 1.5%

b) $RoR_{S\$} = 0.01 + (1 + 0.01)^* \{[(1/1.65) – (1/1.75)]/(1/1.75)\} = +0.0712$ or about + 7.1%

c) Highest RoR is in Singapore at 7.1%. Lowest is in Australia at –1.5%. The US is in between at 2%.

2. The rate of return on dollar deposits is equal to the US interest rate.

The interest rate on German deposits is $R_{DM} = 0.01442$ or 1.442%. Noting that $E^f_{\$/DM} = 0.5807$ and $E_{\$/DM} = 0.5841$ and plugging in to the formula derived in class yields,

$RoR_{DM} = .01442 + (.5807 - .5841)/.5841 + (.01442)[(.5807 - .5841)/.5841] = .008515 \times 100 = .8515\%$

The interest rate on Canadian deposits is $R_{C\$} = 0.00875$ or .875%. Noting that $E^f_{\$/C\$} = .7446$ and $E_{\$/C\$} = .7451$ and plugging in to the formula derived in class yields,

$RoR_{C\$} = .00875 + (.7446 - .7451)/.7451 + (.00875)[(.7446 - .7451)/.7451] = .008073 \times 100 = .8073\%$

Thus, $RoR_{\$} > RoR_{DM} > RoR_{C\$}$ if $R_{\$}$ is larger than .8515% Note that since this is a 90-day interest rate, the rate quote on an annual basis would be $R_{\$} > 3.453\%$

Section 5

1.

a) First apply the formula from Chapter 4, Section 4.3:

$$RoR_{C\$} = \frac{E^{e}_{\$/C\$}}{E_{\$/C\$}}(1 + i_{C\$}) - 1$$

plugging in number gives,

$$RoR_{C\$} = \frac{0.7468}{0.7541}(1 + 0.025) - 1 = 0.0151 \text{ or } 1.51\%$$

Second apply the formula from Chapter 4, Section 4.4:

$$RoR_{C\$} = i_{C\$} + \left(\frac{E^{e}_{\$/C\$} - E_{\$/C\$}}{E_{\$/C\$}}\right) + i_{C\$}\left(\frac{E^{e}_{\$/C\$} - E_{\$/C\$}}{E_{\$/C\$}}\right)$$

plugging in the numbers yields,

$$RoR_{C\$} = 0.025 + \left(\frac{0.7468 - 0.7541}{0.7541}\right) + 0.025\left(\frac{0.7468 - 0.7541}{0.7541}\right)$$

or, $RoR_{C\$} = 0.025 + (-0.0097) + 0.025(-0.0097)$

In percentage form this becomes,

$RoR_{C\$} = 2.5\% \square 0.97\% \square 0.02\% = 1.51\%$

b) The rate of return that arises solely due to the interest earned is given by the first term in the second formula above. This says that the rate of return will rise by 2.5% due to the interest earned.

c) The rate of return that arises from the percentage change in the value of the principal due to the change in the exchange rate is given by the second term in the second formula above. It indicates that the principal value would fall by 0.97 % due to the expected depreciation of the exchange rate.

d) The rate of return that arises from the percentage change in the value of the interest due to the change in the exchange rate is given by the third term in the second formula above. It indicates that the interest value would fall by 0.02 % due to the expected depreciation of the exchange rate.

2.

a) First apply the formula from Chapter 4, Section 4.3:

$$RoR_{£} = \frac{E^{e}_{\$/£}}{E_{\$/£}}(1 + i_{£}) - 1$$

plugging in number gives,

$$RoR_{£} = \frac{1.7956}{1.8574}(1 + 0.045) - 1 = 0.0102 \text{ or } 1.02\%$$

Second apply the formula from Section 10-5:

$$RoR_{£} = i_{£} + \left(\frac{E^{e}_{\$/£} - E_{\$/£}}{E_{\$/£}}\right) + i_{£}\left(\frac{E^{e}_{\$/£} - E_{\$/£}}{E_{\$/£}}\right)$$

plugging in the numbers yields,

$$RoR_{£} = 0.045 + \left(\frac{1.7956 - 1.8574}{1.8574}\right) + 0.045\left(\frac{1.7956 - 1.8574}{1.8574}\right)$$

or, $RoR_{£} = 0.045 + (-0.0333) + 0.045(-0.0333)$

In percentage form this becomes,

$RoR_{£} = 4.5\% \square 3.33\% \square 0.15\% = 1.02\%$

b) The rate of return that arises solely due to the interest earned is given by the first term in the second formula above. This says that the rate of return will rise by 4.5% due to the interest earned.

c) The rate of return that arises from the percentage change in the value of the principal due to the change in the exchange rate is given by the second term in the second formula

above. It indicates that the principal value would fall by 3.33 % due to the expected depreciation of the exchange rate.

d) The rate of return that arises from the percentage change in the value of the interest due to the change in the exchange rate is given by the third term in the second formula above. It indicates that the interest value would fall by 0.15 % due to the expected depreciation of the exchange rate.