1. What was the basic cause of the Asian crisis? What was the basic cause of the Russian crisis?

The Asian crisis was mainly driven by problems in the balance of payments in the countries. More specifically the main causes were the following: the weak domestic financial system, the high levels of foreign debt, the increasing current account deficit, the liberalized capital account (i.e. free international capital flows), the inconsistent monetary and economic policies & the lack of sound corporate governance practices. In the case of Russia, the main problem was the high debt burden carried by private and public businesses (most of this debt US$ denominated), combined w/ weak economic performance, and speculative pressure for depreciation of the Russian rouble.

2. As we have seen in past crises, sometimes exchange rate of a country gets devalued by more than one would predict based on parity condition, such as the interest rate parity. This, as we know ☺, is called overshooting of exchange rates. Now, why overshooting is even more when countries have a lot of foreign debt?

Overshooting of the depreciation/devaluation of the exchange rate is the result of the stickiness of the prices of goods, so that prices of assets, such as the currency, would have to adjust by more as compared to the case where prices of goods were more flexible.

Now, when the depreciation/devaluation takes place, and the country has substantial foreign debt outstanding, the country can technically become bankrupt. Why? Because the value in domestic currency of the foreign currency denominated debt increases post depreciation, and there is a possibility that in terms of local currency the liquid assets of that country are less than the value of the debt. If that happens, the currency of that country is likely to depreciate even further, since now investors will try to leave that currency, and in the process of doing so, they will increase the supply of the currency, thus dumping its price (value) even further.
3. Here are a few exchange rates, as quoted on 9/1 and today (9/26). Compute the percentage change from then to today. Which is the currency that changed by most?

<table>
<thead>
<tr>
<th>Currency (abbreviation in brackets)</th>
<th>Spot Rate, 9/1</th>
<th>Spot Rate, 9/26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore Dollar (SGD)</td>
<td>$ 1.754 /SGD</td>
<td>$ 1.7313 /SGD</td>
</tr>
<tr>
<td>Indian Rupee (INR)</td>
<td>INR 45.7549/ $</td>
<td>INR 45.8599/ $</td>
</tr>
<tr>
<td>Brazilian Cruzeiro Real (BRR)</td>
<td>BRR 2.988/ $</td>
<td>BRR 2.9395/ $</td>
</tr>
</tbody>
</table>

**Hint:** Use the following rules

For direct quotation, \[ \text{%Change} = \frac{\text{Ending Rate} - \text{Beginning Rate}}{\text{Beginning Rate}} \times 100. \]

For indirect quotation, \[ \text{%Change} = \frac{\text{Beginning Rate} - \text{Ending Rate}}{\text{Ending Rate}} \times 100. \]

As we have mentioned in class (thanks Alex!) the home country is assumed to be US. So,

1. **Singapore Dollar:** this is a direct quotation, so
   \[ \text{%Change} = \frac{\text{Ending Rate} - \text{Beginning Rate}}{\text{Beginning Rate}} \times 100 = \frac{1.7313 - 1.754}{1.754} \times 100 = -1.29\% \]

2. **Indian Rupee:** this is an indirect quotation, so.
   \[ \text{%Change} = \frac{\text{Beginning Rate} - \text{Ending Rate}}{\text{Ending Rate}} \times 100 = \frac{45.7549 - 45.8599}{45.8599} \times 100 = -0.23\% \]

3. **Brazilian Real:** this is an indirect quotation, so
   \[ \text{%Change} = \frac{\text{Beginning Rate} - \text{Ending Rate}}{\text{Ending Rate}} \times 100 = \frac{\text{BRR2.988} - \text{BRR2.9395}}{\text{BRR2.9395}} \times 100 = 1.65\% \]

The Brazilian real changed by most.

4. Spot and 90-day forward exchange rates for several major currencies are shown below. For each pair, calculate the percentage forward **premium** or **discount**, expressed at an annual rate. So, what do you think the prospects of the different currencies are?

<table>
<thead>
<tr>
<th>Currency (abbreviation in brackets)</th>
<th>Spot Rate, as of 9/26</th>
<th>90-day Forward, as of 9/26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro (EUR)</td>
<td>$ 1.1468/ EUR</td>
<td>$ 1.1454/ EUR</td>
</tr>
<tr>
<td>Swiss Franc (SF)</td>
<td>SF 1.3425/$</td>
<td>SF 1.3395/$</td>
</tr>
<tr>
<td>Japanese Yen (JPY)</td>
<td>¥ 111.83/ $</td>
<td>¥ 111.6615/ $</td>
</tr>
<tr>
<td>British Pound (GBP)</td>
<td>$ 1.65955/ GBP</td>
<td>$ 1.6488/ GBP</td>
</tr>
</tbody>
</table>
Hint: when you work on this one, use the following rules (remember from the lecture on forward rate):

For direct quotes, \( f_{\text{HOME}}^{\text{Forward}} = \frac{\text{Forward} - \text{Spot}}{\text{Spot}} \times \frac{360}{\text{days}} \times 100. \)

For indirect quotes, \( f_{\text{FOREIGN}}^{\text{Forward}} = \frac{\text{Spot} - \text{Forward}}{\text{Forward}} \times \frac{360}{\text{days}} \times 100. \)

1. Euro:

\[
f_{\text{HOME}}^{\text{F}} = \frac{\text{Forward} - \text{Spot}}{\text{Spot}} \times \frac{360}{\text{days}} \times 100 = \frac{1.1454 - 1.1468}{1.1468} \times \frac{360}{90} \times 100 = -0.49\%. \]

forward discount on Euro.

2. Swiss Franc:

\[
f_{\text{FOREIGN}}^{\text{F}} = \frac{\text{Spot} - \text{Forward}}{\text{Forward}} \times \frac{360}{\text{days}} \times 100 = \frac{SF1.3425 - SF1.3395}{SF1.3395} \times \frac{360}{90} \times 100 = 0.90\%. \]

forward premium on the SF.

3. Japanese Yen:

\[
f_{\text{FOREIGN}}^{\text{F}} = \frac{\text{Spot} - \text{Forward}}{\text{Forward}} \times \frac{360}{\text{days}} \times 100 = \frac{Yen11.83 - Yen11.6615}{Yen11.6615} \times \frac{360}{90} \times 100 = 0.60\%. \]

forward premium on the Yen.

4. British Pound:

\[
f_{\text{HOME}}^{\text{F}} = \frac{\text{Forward} - \text{Spot}}{\text{Spot}} \times \frac{360}{\text{days}} \times 100 = \frac{1.6488 - 1.65955}{1.65955} \times \frac{360}{90} \times 100 = -2.59\%. \]

forward discount on the British Pound.

5. The following exchange rates are available to you.

<table>
<thead>
<tr>
<th>Bank</th>
<th>Quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuji Bank, Tokyo</td>
<td>¥120/$</td>
</tr>
<tr>
<td>Credit Suisse First Boston, New York</td>
<td>SF 1.60/$</td>
</tr>
<tr>
<td>Swiss First Bank, Zurich</td>
<td>¥80/ SF</td>
</tr>
</tbody>
</table>

Assume that you have an initial SF 10,000,000. Can you make a profit via triangular arbitrage? If not, explain why? If yes, show how.

There are three ways to go for setting up the arbitrage (you can do it w/ the ¥/$, ¥/SF, and SF/$ rates).

Here, I will use the ¥/SF rate to check up for triangular arbitrage.
**Step 1.** First, we have to compute the ¥/SF cross rate is: ¥120/ SF / SF 1.6/$ = ¥75/$

**Step 2.** Since the cross rate above is not same as the Swiss First Bank rate of ¥80/$ there is an arbitrage opportunity.

**Step 3.** Here we set up the arbitrage. Here is the general idea. Clearly, you have to sell SF at the high rate, and then buy back the SF at the low rate.

So,

A. Sell SF 10,000,000 for Yen @ Swiss First Bank in Zurich @ ¥80/ SF to get: SF 10,000,000 x ¥80/ SF = ¥800,000,000.

B. Now we have to get back these proceeds to SF, but at the cross rate: so exchange the proceeds ¥800,000,000 @ ¥120/$ for US$ to receive ¥800,000,000 / ¥120/$ = $ 6,666,666.67 from Fuji Bank in Tokyo.

C. Finally, get these $ proceeds into SF, @ SF 1.6/$ to receive $ 6,666,666.67 * SF 1.6/$ = SF 10,666,666.67 from Credit Suisse First Boston in New York.

D. What is the profit? We started w/ SF 10,000,000 and ended up w/ SF 10,666,666.67. Long live the arbitrage ☺!