Econ 160B: International Macroeconomics
Solution key to homework #2

1a. In the long run, the price level equals the ratio of money supply to money demand. A 25% larger increase in the Japanese money supply than in the US money supply implies that the Japanese price level should increase 25% more than the US price level. **Relative purchasing power** parity in turn implies that the Japanese yen should depreciate by 25% in relation to the dollar in the long run. Thus the exchange rate 10 years from now should be about \$1 = 150 yen. This theory applies in the long run because it requires prices to be flexible, and it is based on PPP, which holds best in the long run.

b. The higher output growth would make the value of the yen appreciate 30%, so combined with the 25% depreciation due to the money supply growth described above, this implies an appreciation on net (of 5%), that is, more dollars per yen.

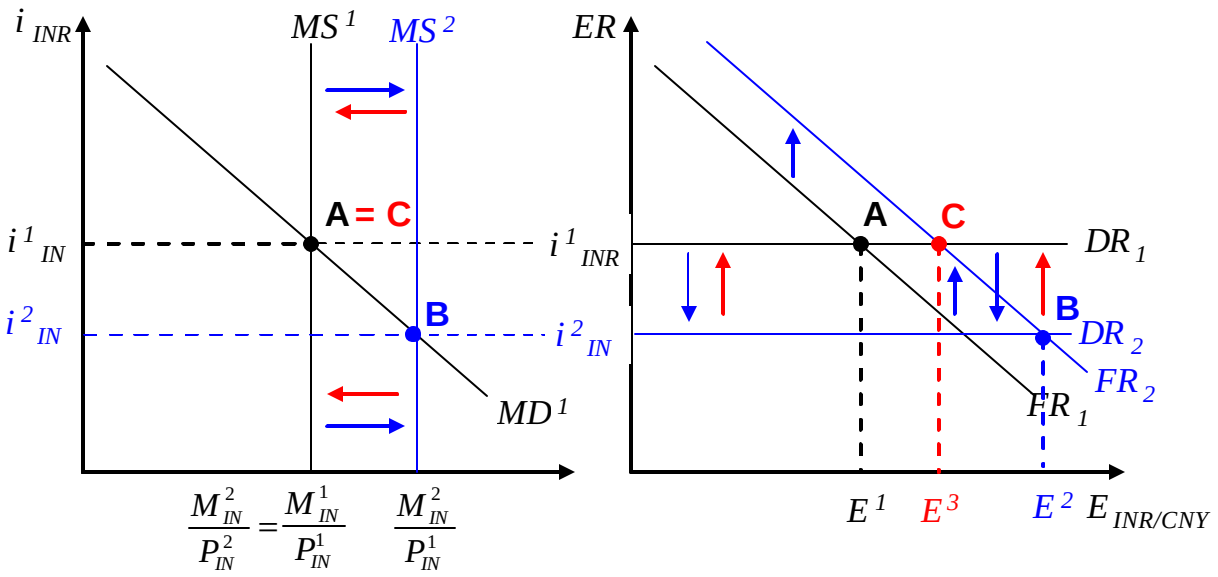
2a. If absolute PPP holds, real exchange rate equals 1.

b. If UIP and Covered Interest rate Parity (CIP) hold, the forward exchange rate equals the expected future spot rate. Therefore, the forward exchange rate is 1.1.
UIP: $(E^e_{R/P} - E_{R/P})/ E_{R/P} = i_R - i_P$
Covered Interest Rate Parity: $(F_{R/P} - E_{R/P})/ E_{R/P} = i_R - i_P$
So $E^e_{R/P} = F_{R/P} = 1.1$

c. Not enough information.
Using real interest rate parity, we know that the real interest rates are the same across the two countries, but we can't compute the value
Note: Using real interest rate parity, we can find that:
so $i_R - i_P = \Pi^e_{Br} - \Pi^e_{Ar}$, $i_R = 20\%$, $\Pi^e_{Br} - \Pi^e_{Ar} = 10\%$. Therefore, $i_P = 10\%$
But this only tells us about the nominal interest rates in the countries, not the real interest rates.

d. According to UIP, $i_R = i_P + (E^e_{R/P} - E_{R/P})/ E_{R/P}$:
$0.2 = 0.1 + \frac{(1.1 - x)}{x}$. Therefore, $x\ (E_{R/P}) = 1$.

3a. See diagram below.

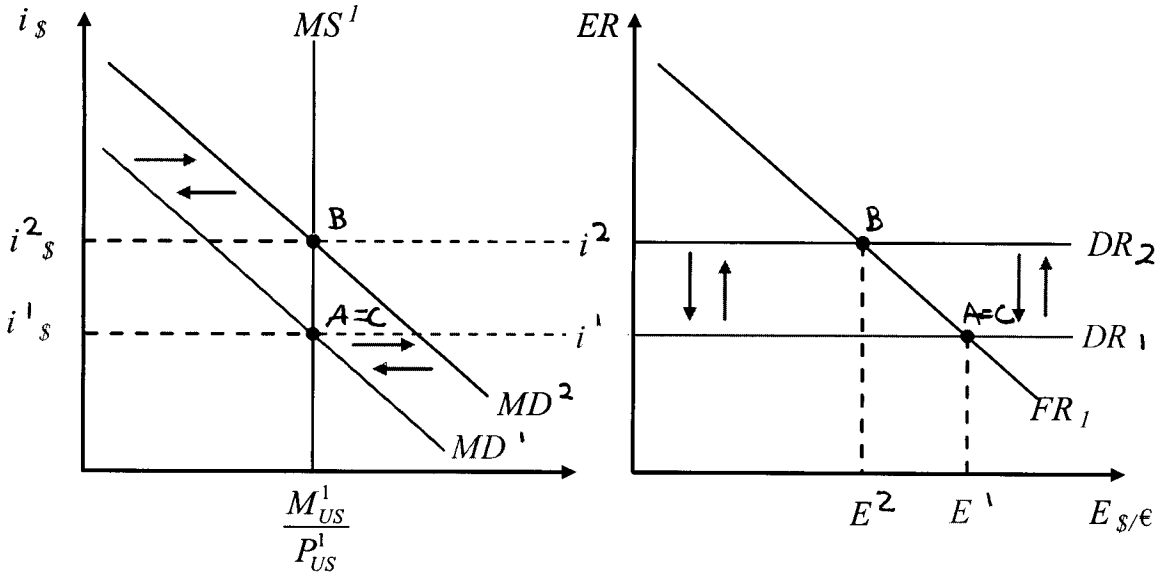


b. Short run: India's interest rate decreases, China's interest rate remains unchanged, $E_{INR/CNY}$ increases, $E^e_{INR/CNY}$ increases, India's price level remains unchanged. =

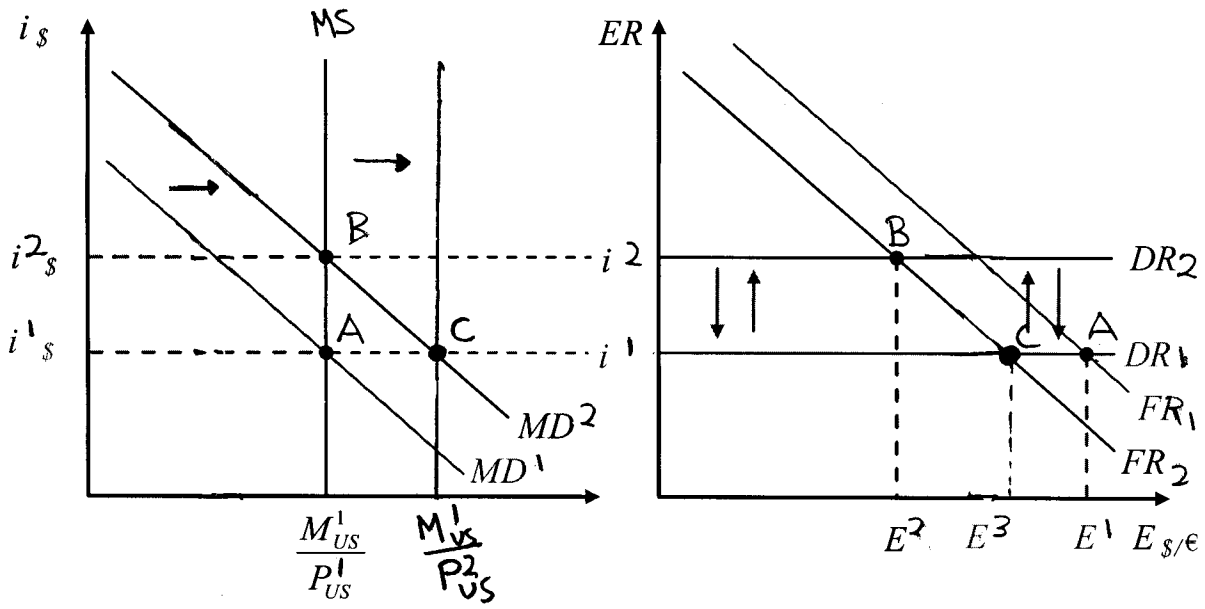
c. Long run: India's interest rate remains unchanged, China's interest rate remains unchanged, $E_{INR/CNY}$ increases, $E^e_{INR/CNY}$ increases (remains unchanged in transition from short to long run), India's price level increases.

d. Initially the exchange rate rises to E2 and overshoots its long-run value E3. We can see this in the diagrams above. The overshooting is caused by the investors' adjustment of exchange rate expectations coupled with lower domestic interest rates.

4a. See diagram below. The long-run values are the same as the initial values because the shock is temporary. Also, because the shock is temporary, we assume that the reversal of real money demand occurs before the price level adjusts – that is MD returns from MD^2 to MD^1 before the price level changes.



b. See below. In this case, the expected exchange rate changes because the shock is permanent. In the long run, the price level will have to decrease to adjust for the rise in real money demand. That is, the nominal interest rate returns to its initial value in the long run. This requires that the price level falls in the long run, to raise real money supply from MS1 to MS2. The increase in real money demand will have to be met one for one with a rise in real money supply (generated by a fall in the price level). E overshoots E3 at E2.



c. See diagrams below.