International finance
Problem set 6

1. The Euro has been quite high relative to the US dollar over the last few years. Use the modern version of the monetary model to assess the likelihood of the following alternative explanations for its strength:

   (a) An increase in US output relative to its European counterpart.

   (b) An increase in the US money supply relative to its European counterpart.

   (c) Lower nominal interest rates in the US relative to Europe.

   (d) Higher expected money growth in the US relative to Europe.

2. Consider the modern monetary model described by the equation

$$e_t = (m_t - m_t^*) - (y_t - y_t^*) + 0.5\left(e_{t+1}^e - e_t\right). \tag{1}$$

   Expectations are formed rationally or, equivalently in the present setup, agents have perfect foresight; i.e. $e_{t+1}^e = e_{t+1}$. Assume for simplicity that $-m_t^* - (y_t - y_t^*) = 0$ and is expected to stay at that level forever. Derive the time path of the nominal exchange rate before and after the following policy changes.

   (a) Suppose the rate of money growth has been 10% until time t and agents expected it to remain at that level.

      i. At time t the central bank announces it will halve the rate of money growth from time t onwards and agents expect it to keep at its new rate forever after.

      ii. At time t the central bank announces it will halve the rate of money growth from time t onwards, but agents actually expect it to double the rate of money growth permanently with probability one.

      iii. At time t the central bank announces it will halve the rate of money growth from time t onwards, but agents actually expect it to do so only with a 0.5 probability. They attach the same probability to the central bank leaving the rate of money growth unchanged forever.

   (b) Suppose the money supply has been constant at $m = 10$ until time t (time t excluded). At time t the central bank halves the (log of the money supply); i.e. $m_t = 5$. Agents, though, expect the central bank to increase the (log of) the money supply to 20 in $t + 1$ and keep it at that level forever after. Hint: solve for e_{t+1} first and work you way backwards.