Practice Questions

Note: These questions are based on SOME of the material covered in class.
Therefore, these questions do not necessarily represent the exam material.

Note: Question 1 was done in class

1. Suppose that the total population in the economy is 400. Let this population be equally divided between two groups: the rich and the poor.

- The poor have less human capital per person than the rich do.
- Within each group, individuals do not differ by their skill level.
- Each individual in this economy accumulates human capital. Each person has one unit of time to split between human capital accumulation and work, each period.
- Suppose that $b = b_r$ and $u = u_r$ for the rich. Similarly, let $b = b_p$ and $u = u_p$ for the poor.
- In the economy, output is produced using the efficiency units of labor. That is output in period t is given by $Y_t = 0.5(200u_rR_t + 200u_pP_t)$

where R_t and P_t are the human capital of a rich and poor person, respectively, at the beginning of period t.

- At the beginning of period zero, R_0 and P_0 are respectively 2 and 1. Assume the following numbers: $b_r = 14,\ b_p = 12,\ u_r = u_p = 0.8$ Let R_0=2 and P_0=1.

a. What is the initial level of human capital of the country (i.e. h.c. at the beginning of period 0)?
b. What is average labour income among the rich in period 0?
c. What is average labour income among the poor in period 0?
d. Calculate the human capital growth rate among the rich and poor, separately.

2. Consider the endogenous growth model seen in class (human capital accumulation without population growth). Suppose that there is an increase in z at the beginning of period T. What will happen to the level and growth rate of consumption and output? Show graphically.
   There is an increase in the level of consumption and output but the growth rate is unchanged since there was no change in b or u. Recall the growth rate=b(1-u)-1.

   Note: You may construct these graphs.

3. Suppose that the nominal interest rate is zero, that is $R = 0$.

   a. What is the equilibrium quantity of credit card balances?
      The interest rate equals the opportunity cost in equilibrium. It represents how much you are willing to give up to hold cash. If R=0, the opportunity cost of holding money is zero and so the demand for credit card balances is zero.
   b. In what sense does the economy run more efficiently with R=0?
      Since the opportunity cost is reduced to zero then consumers and firms in the model have no desire to pay a positive cost to use credit cards for transactions. Therefore, efficiency is achieved.

c. Explain your results in parts (a) and (b). Discuss the realism of these predictions.
In practice, it seems implausible that a zero interest rate would imply that no one would use alternatives to cash supplied by the banking system. Indeed, late in 2008, safe interest rates on government debt were essentially zero in the United States and Canada, but credit cards, debit cards, and cheques were still in wide use. In practice, there is a deterrent to holding cash, which is that it can be lost or stolen. Even if the nominal interest rate is zero, there is still a demand for the transactions services offered by banks, as banks provide safekeeping services.

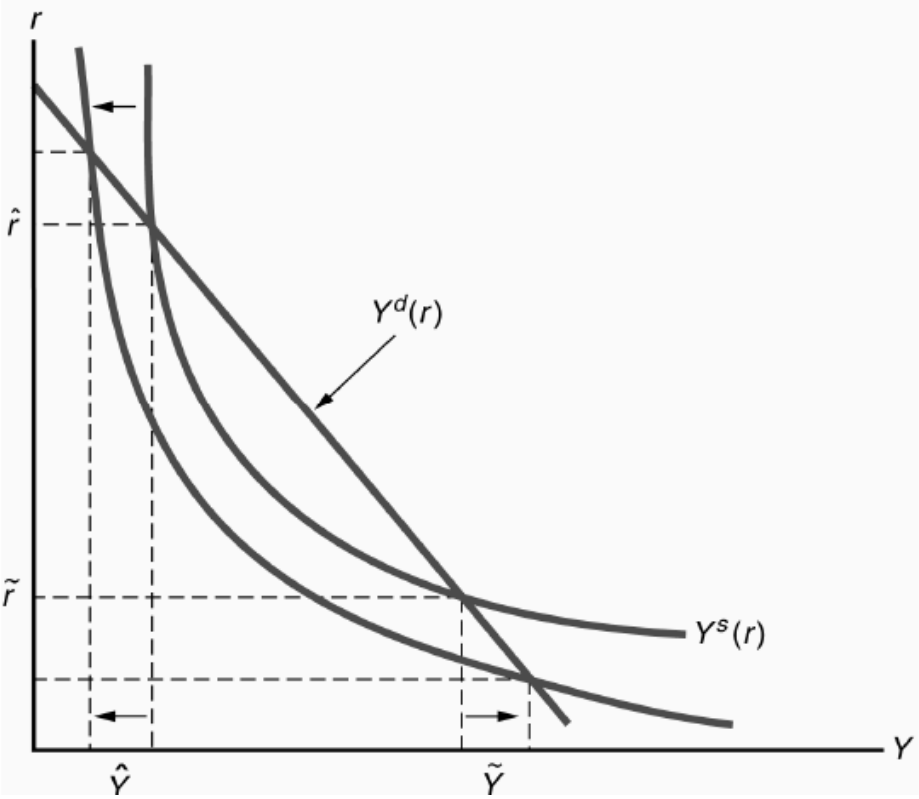
4. Suppose the central bank observes a drop in real GDP, but does not know what causes this drop.
   a. How would the central bank respond if it believed that GDP dropped is because of a decline in total factor productivity, and that the real business cycle theory is correct?
   In the real business cycle model, what the central bank should do in response to a decline in TFP depends on the central bank's goals. If the central bank wishes to stabilize the price level, then it should reduce the money supply, but money is neutral in the real business cycle model, so there is no role for the central bank other than price level control.
   Note: Since Y falls and interest rate increases then money demand decreases which puts upward pressure on prices.
   You may construct the graphs on your own for practice. This is the opposite of what was done in class with positive TFP shocks.

   b. How would the central bank respond if it believed that GDP dropped because of a wave of pessimism, and the Keynesian coordination failure model is correct?
   In the coordination failure model, money is neutral, just as in the real business cycle model, unless money plays the role of a "sunspot" variable. In that case, central bank actions mean something to private sector economic agents, and the central bank needs to take that into account. For example, if private sector economic agents are all optimistic when the money supply increases, then if the central bank detect pessimism that could reduce GDP, the money supply should increase so that there is an optimistic equilibrium. However, if money is not a sunspot variable and the central bank wishes to control the price level, then it should reduce the money supply. In this instance, it does not matter to the central bank whether the correct model is the coordination failure model or the real business cycle model. If price level control is the only goal then a reduction of the money supply is called for in either case.
   Note: See class notes for graphs

   Note: Explain your answers to parts (a) and (b) with the aid of diagrams.

5. In the coordination failure model suppose there is a permanent increase in government spending.
   a. Determine how this will affect output and employment. Illustrate graphically.

The permanent increase in government spending does not affect the aggregate demand curve, because the increase in government spending generates an approximately equal decrease in consumption. The implied increase in taxes shifts the labour supply curve to the right. In the coordination failure model, this produces a leftward shift in aggregate supply. Recall that the labour demand curve is upward sloping and steeper than the labour supply curve.
In the "good" equilibrium, output increases which requires employment to increase.
In the "bad" equilibrium, output decreases which requires employment to decrease.



b. Will real output become more or less volatile overtime?
Real output has become more volatile. The bad equilibrium has become "worse" and the good equilibrium has become "better"