Econ 115: The Great Depression
Due in gsi mailboxes at 5 PM on October 16, 2009. Please show all your work.

1) (The Keynesian Cross.) Define the following variables:
   Y = Output (GDP)
   AD = Aggregate Demand
   C = Consumption
   I = Investment
   G = Government Spending
   T = Net taxes = taxes – transfers

   a) Let $C = a + b(Y-T)$, $0 < b < 1$. Interpret b. Why is it reasonable to assume that b lies between 0 and 1?
   b) Let $AD = C + I_0 + G_0$, where I_0 and G_0 are fixed. Substitute the expression from part (a) for C. Then graph aggregate demand with aggregate demand on the vertical axis and Y on the horizontal axis. What can you say about the slope of the aggregate demand curve?
   c) In equilibrium, output must equal aggregate demand (Y=AD). Add this line to your graph.
   d) Suppose a financial crisis lowers how much firms want to invest and consumers want to spend. In this model, what happens? Show the result in your graph.
   e) In this model, what can the government do (if anything) to bring output back to its pre-crisis level?
   f) Was fiscal policy used during the Great Depression? Explain.
   g) Is the Obama administration currently using fiscal policy?
   h) What does the Great Depression and / or the current crisis suggest (if anything) about the validity of this model?

2) Now suppose investment depends on the interest rate: $I = c + d*i$, where i is the nominal interest rate, and c and d are parameters.[1] We assume that d is negative.
   a) What is the intuition for why d<0?
   b) With this investment function, what happens in the graph from problem 1 if the interest rate rises? If it falls?

3) If investment depends on the interest rate, then in order to figure out what Y is, we must know what i is. To pin down i, we think about people's choice between buying bonds (which pay interest rate i), and keeping their wealth in money (which pays no interest but is convenient for transactions).
   a) Suppose money demand, $M^D = e + f*i$. Would you expect f to be positive or negative? Why?

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[1] In fact, investment ought to depend on the real interest rate, not the nominal interest rate. The real and nominal interest rate are linked by the *Fisher equation*: $i = r + \pi$, where r is the real interest rate and π is inflation (the growth rate of prices). For this model, we can usually think about $\pi=0$ so that the nominal and real interest rates are identical.

b) In equilibrium money supply must equal money demand. Given this, how will an increase in the money supply affect the interest rate? Why?

c) How will an increase in the money supply affect output?

d) Do your answers to (b) or (c) change if the increase in the money supply occurs when the interest rate is zero?

4) The quantity equation of money is: $m*v = p*Y$, where Y is (real) output (GDP), m is the money supply, p is the price level, and v is velocity – the 'speed' with which money circulates through the economy, or alternatively, the inverse of money demand. Lower money demand means people hold on to less money, which means money circulates more quickly through the economy.

a) Given what we know about money demand from problem (3), how do you think velocity depends on the interest rate?

b) Fiscal policy, by increasing the supply of government bonds, tends to raise interest rates. In the context of the quantity equation of money, how would this affect prices and / or output?

c) When is fiscal policy likely to be preferred to monetary policy? Why?