1. Suppose that a computer virus disrupts the use of credit cards and causes an increase in the amount of cash and bank account balances (demand for money) which households hold.

Use IS-LM curves to describe the short-run and long-run effects this would have on:

(a) employment (b) investment (c) wages (d) “real” money balances (e) exports

2. Suppose that the growth rate of output \( (y_t) \) is defined as the change in the log of output \( (Y_t) \). That is, \( y_t = Y_t - Y_{t-1} \). Suppose further that growth is described by the process:

\[ y_t = 3 + e_t \]

where \( e_t = u_t + .5u_{t-1} \) and \( u \) is a “white noise” error.

(a) If \( Y_t \) is described as an ARIMA(P,D,Q), what are the values for P, D, and Q?

(b) If \( Y_{2001} = 1000 \) and \( u_{2001} = -2 \), what is the optimal forecast for \( Y_{2002} \)? \( Y_{2003} \)? \( Y_{2020} \)?

3. (a) Use the “classical” model discussed in class to calculate the long-run multipliers:

\[ dC/dG, \ dC/dT, \ dC/d\pi^e, \ dI/dG, \ dI/dT, \ dI/d\pi^e \]

(b) Recalculate these multipliers assuming that consumption also depends on the real interest rate

\[ C = C(Y-T,i-\pi^e) \] with \( C_1 = dC/d(Y-T) > 0 \) and \( C_2 = dC/d(i-\pi^e) < 0 \)

(c) Explain the differences using IS-LM curves

4. Recently the U.S. congress has passed a bill which includes tax cuts. One part is a $600 per household “rebate” which was paid this year and is not to be repeated. A second part is a reduction in income tax rates which will be phased in beginning next year.

(a) Assuming the consumption function used for comparative statics, \( C = C(Y-T) \), which provision should have the greatest effect on current consumption?

(b) How would your answer change if consumers’ behavior is best described by the permanent income theory? (c) by Ricardian equivalence?

(d) In the consumption function described in question 3 (b) why is \( C_2 < 0 \)? why is the real interest rate,
i-π^e, used rather than the nominal rate, i?

5. Use IS-LM curves to describe the short-run and long-run effects of the recent tax cuts on:

(a) employment  (b) investment  (c) consumption  (d) “real” money balances  (e) exports

How would your short-run answers change if the Federal Reserve was attempting maintain a fixed exchange rate at the same time?