“Midterm” Exam I
March 16, 2000
Econ 602 - Macroeconomic Analysis

Please answer all questions. If you have any concerns or doubts, please address them to me, and if possible I will clarify. When asked to explain, please do so thoroughly and concisely. In addition to evaluating the content of your responses, I will also be evaluating your ability to judge what constitutes a thorough answer to a question. In some instances, I have set up the questions to “coach” you along these lines. In other instances, you must judge for yourself how to proceed. I encourage you to make reference to graphs (clearly labeled), equations, examples, and counter-examples whenever possible. If your answer does not include relevant information or useful analytical analysis you will not receive full credit. Don’t go overboard though! If your answer includes extraneous information that does not add to your analysis, you will be penalized.

Good luck! And enjoy your spring break.

TOP 10 REASONS TO STUDY ECONOMICS

1. Economists are armed and dangerous: “Watch out for our invisible hands.”
2. Economists can supply it on demand.
3. You can talk about money without every having to make any.
4. You get to say “trickle down” with a straight face.
5. Mick Jagger and Arnold Schwarzenegger both studied economics and look how they turned out.
6. When you are in the unemployment line, at least you will know why you are there.
7. If you rearrange the letters in “ECONOMICS”, you get “COMIC NOSE”.
8. Although ethics teaches that virtue is its own reward, in economics we get taught that reward is its own virtue.
9. When you get drunk, you can tell everyone that you are just researching the law of diminishing marginal utility.
10. When you call 1-900-LUV-ECON and get Kandi Keynes, you will have something to talk about.
1. Soon after his election in 1992, President Clinton proposed to reduce government spending and increase taxes.
   a. In the context of the neoclassical model of saving and investment, state and explain the effects of this policy on consumption, private saving, public saving, and national saving.
   b. Illustrate graphically the effects of this policy on the equilibrium quantities of national saving, investment, and the real interest rate. (All you need to do is provide the graph. No explaining is necessary here. That is covered below.)

2. Many people believe that the reunification of Germany has created substantial investment opportunities in what was formerly East Germany.
   a. Assuming this assessment is correct, use the small open economy version of the neoclassical model of saving and investment to graphically illustrate the effects of reunification on German net foreign investment, the German trade balance, and the German exchange rate.
   b. Germany has had to increase its government spending dramatically to pay for the costs of reunification. Illustrate graphically the effects of this fiscal event on German net foreign investment, the German trade balance, and the German exchange rate.

3. In the first presidential debate of 1984, Walter Mondale made the statement that “everybody, every economist, every businessman” agrees that deficits affect interest rates. In point of fact, that statement, particularly as it concerns economists, is very far from true. Consider a fiscal policy that increases the budget deficit. (Please read parts (a) and (b) before selecting the policy.)
   a. Construct an example demonstrating that the budget deficit affects interest rates. Explain intuitively why the deficit is related to the interest rate in your example.
   b. Using the same fiscal policy analyzed in part (a), construct another example demonstrating that the budget deficit does not affect interest rates. Explain intuitively why the deficit is not related to the interest rate in this example.
   c. Identify and explain thoroughly at least one circumstance (other than the one you constructed in part (a)) in which your result from (b) may fail to hold.
   d. Does your answer in part (b) indicate that the size of government \( G \) is irrelevant as far as interest rates are concerned? If yes, explain. If not, construct a counter-example and explain.
   e. In parts (a) and (b) you constructed two examples. One that demonstrated deficits and interests rates are related. And another that demonstrated they are not. Whether or not deficits are related to interest rates in reality is an empirical matter. In the 1980s, large US budget deficits coincided with low national saving, high real interest rates, and a large trade deficit. What conclusion, if any, do you draw from this evidence. Explain thoroughly.

4. Consider the simple Solow growth model with non-zero population growth and technological progress.
   a. Derive the time path of the capital stock per efficiency unit of labor.
   b. Describe the steady state equilibrium.
   c. What implications can be drawn from your characterization of the dynamics and equilibrium of the model?
   d. Suppose that the saving rate increases. Demonstrate graphically what happens to the steady state values of capital per efficiency unit of labor, output per efficiency unit of labor, and consumption per efficiency unit of labor?
   e. Sketch the transitional dynamics of the natural log of capital per worker, output per worker, consumption per worker, and total output as the economy moves to its new steady state.
   f. Often times you will hear people say that according to the Solow growth model, policy doesn’t “matter.” Comment on this statement.
   g. To the extent that policy does not matter in the context of the Solow growth model, is this the case for neoclassical models of growth in general? Explain.
   h. Suppose that you observed an economy that was experiencing declining interest rates. In the context of the Solow growth model, how would you explain this phenomenon? Please provide both an intuitive and an analytical explanation.
5. Consider the following production function, \( Y = AK^\alpha (hL)^{1-\alpha} \), where \( A \) denotes the level of technology, \( K \) stands for physical capital, \( L \) stands for labor, and \( h \) stands for human capital.

a. Would such a production function characterize an exogenous growth model or an endogenous growth model? Explain your result intuitively and demonstrate it analytically. (Hint: in equilibrium, the marginal products of physical and human capital will be equated. You should solve this condition for human capital and substitute the result into the production function before answering the question. You may also assume that labor is supplied inelastically and that the quantity of labor supplied is normalized to one.)