Washington University   Spring 2008
Department of Economics   James Morley

Economics 402

Optional "Spring Break" Assignment
Due on Tuesday 3/18

This assignment is based on material in the reading package (Romer, Chapter 1, The Solow Growth Model, pp. 27-43 of reading package). This is intended to be difficult material. You will need to read the Romer chapter carefully.

1. Consider $Y = F(K,L)$ with constant returns to scale. Then consider intensive form $y = f(k)$ where $y \equiv Y/L$ and $k \equiv K/L$. Show that $f'(k) \equiv \partial f(k)/\partial k = MPK$. What are the economic implications of the constant expected returns assumption for the role of gains from trade and the role of land as an input? *(5 points)*

2. Find data on labour, capital, and output for the U.S. economy for a long time span. Plot the natural logarithms of the series against time. Are the growth rates of capital/labour and output/labour similar? Why would similar growth rates provide support for the Solow Growth Model? *(5 points)*

3. To what extent can capital accumulation explain different levels of output per person across countries and across time? Consider, for example, the implications of variations in capital across countries given the same level of technology for rates of returns in financial markets. Discuss why even a major change in the saving rate would not have a big impact on output per worker in practice (according to the Solow Growth Model with parameter values similar to their values for the United States). *(10 points)*

4. Discuss evidence on convergence and why it might be overstated. *(5 points)*