Econ. 8106
Prof. Jones
Fall 2000

Problem Set #1: Due Tuesday, October 31 (Happy Halloween)

Do not work together on this problem set.

1. A) Assuming t = 0 corresponds to calendar year 1850:

   i) What does the standard one sector growth model say the time series of output, consumption and investment should be for the US economy for the period 1950 to 2000? How does this compare to the actual series for this period? Are there any important qualitative differences between what the model says and what holds in the data?

   ii) Do problem i) for Argentina.

   iii) Do problem i) for Japan.

   iv) Do problem i) for Chad.

   B) Do problem A) if t = 0 corresponds to 1900.

   C) Do problem A) if t = 0 corresponds to 1950.

Note: You will have to make some assumptions to answer this question. For Mikhail's sanity, please make these as clear as possible. Also, make as few assumptions as you can, fewer assumptions is better and will be rewarded. It would also probably be very useful if you found some nice way to summarize your results (like plots of the time series).

2. Show that in the standard neoclassical growth model, investment is irrelevant in equilibrium from the individual consumer's point of view. Explain why this is true. Write a generalization of the model where this does not hold and explain why.

3. Construct an N country version of the single sector growth model in which all goods can move freely across country lines except labor which must stay in it's home country.

A. Define a competitive equilibrium for this economy.

B. Does the result you gave in 2 still hold in this model?

Assume that labor is inelastically supplied for the remainder of the problem.

C.State and prove a result showing that for all times and for all initial conditions, output is the same in every country.

D. Assume that all consumers in all countries have identical preferences given by the standard CES example. What does C) imply about the time path of trade flows and debt payments across countries if: i) initial capital stocks are the same in all countries, ii) initial capital stocks differ across countries?

E. Consider a version of the model in which discount factors differ across countries. What happens to the distribution of consumption across countries as time goes on?