

PROBLEM SET #3

1. Choose two countries that are important (to each other) trading partners, one with higher output per worker than the other. Use Summers-Heston data or World Development Indicators data to try to answer Lucas's question: To what extent can differences in output per worker be explained by differences in capital per worker?

a) Use IMF real interest rate data to try to make inferences about differences in capital per worker across countries. How much of the difference in output per worker be explained by differences in capital per worker? If capital flows equalized the rental rates on capital, what would happened to output per worker in the different countries?

b) Use data on investment and the accumulation equation

$$K_{t+1} = (1 - \delta)K_t + I_t,$$

where $\delta = 0.05$ to determine capital per worker in some year. Be explicit how you choose the initial value of K_t . Answer the same questions as in part a and compare.

c) Discuss what you have learned from this exercise and what more you think would be relevant in explaining differences in output per worker across countries.

2. Find data to calculate the bilateral real exchange rate between two countries who have a bilateral trade relation that is important to at least one of the countries. Find data on the prices of traded goods in these two countries. Calculate a decomposition of the bilateral real exchange rate of the form

$$rer_t = rer_t^T + rer_t^N,$$

where rer_t is the natural logarithm of the bilateral real exchange rate and rer_t^T is the logarithm of the bilateral real exchange rate for traded goods. Calculate the correlation between rer_t and rer_t^N in levels, in 1 year differences, and in 4 year differences.

Calculate ratio of the standard deviations of rer_t and rer_t^N in levels, in 1 year differences, and in 4 year differences. Calculate a variance decomposition of rer_t in terms of rer_t^T and rer_t^N in levels, in 1 year differences, and in 4 year differences.

3. Write a short essay discussing the advantages and the difficulties of modeling the debt crises that have recently occurred in Greece and Ireland and are currently occurring in Portugal and Spain as self-fulfilling debt crises along the lines of

H. L. Cole and T. J. Kehoe (1996), "A Self-Fulfilling Model of Mexico's 1994-95 Debt Crisis," *Journal of International Economics*, 41, 309-330.

H. L. Cole and T. J. Kehoe (2000), "Self-Fulfilling Debt Crises," *Review of Economic Studies*, 67, 91-116.

Use whatever articles in the academic literature or popular press that you can find. Locate relevant data if possible. One place to start is

C. Chamley and B. Pinto (2011), "Why Official Bailouts Tend Not to Work: An Example Motivated by Greece 2010," *The Economists' Voice*, 8.