UNIVERSITY OF CALIFORNIA
DEPARTMENT OF ECONOMICS

Economics 202A
Fall 2015
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Mini-Problem Set 6
Due in at the start of class, Tuesday, October 13

INSTRUCTIONS:

– Give the best answer to 5 of the following 6 questions. Note:

– If you wish, you may add a BRIEF explanation of your answer to AT MOST ONE question. In that case, your score on that question will be based on your answer and explanation together. This means that an explanation can either raise or lower a grade.

– If you answer all 6 questions, your overall problem set score will be based on your average, not on your 5 best scores.

1. In models where the allocation of resources to R&D is determined by market forces, the inputs that embody different ideas are typically modeled as:

A. Supplied in exogenously determined amounts.
B. Public goods.
C. Perfect substitutes for one another.
D. Imperfect substitutes for one another.

2. One of the empirical issues that Jones addresses in "Time-Series Tests of Endogenous Growth Models" is:

A. Whether population growth is stationary or nonstationary.
B. Whether the growth rate of income per capita is higher in countries with larger populations.
C. The horizon over which investment affects growth.
D. The correlation between the number of scientists and engineers and the saving rate.

3. The "accounting" approach to decomposing cross-country income differences described in Section 4.2 of Romer, *Advanced* Macroeconomics, fails to assign to human capital:

A. Differences in income stemming from differences in the quality of schooling.
B. Any impact of human capital on income that operates through externalities.
C. The fact that when human capital raises income, if the saving rate does not change then the quantity of saving rises, thereby raising the stock of physical capital.
D. (A) and (B).
E. (A) and (C).
F. (B) and (C).
G. (A), (B), and (C).
H. None of the above.

4. If the production function in country i is $Y_i = K_i^{\alpha}[A_iH_i]^{1-\alpha}$, $0 < \alpha < 1$, we could reasonably measure the contribution of differences in human capital to the difference in log income per worker between two countries, 1 and 2, as

A. $\ln(H_2/L_2) - \ln(H_1/L_1)$.

B. $[(1-\alpha)/\alpha][\ln(H_2/L_2) - \ln(H_1/L_1)]$.

C. $\alpha\ln K_2 + (1-\alpha)[\ln A_2 + \ln H_2] - \{\alpha\ln K_1 + (1-\alpha)[\ln A_1 + \ln H_1]\}$.

D. $\ln(H_2/Y_2) - \ln(H_1/Y_1)$.

5. The following is an example of income differences <u>NOT</u> due to differences in social infrastructure:

A. Country A has a better functioning legal system than Country B; as a result, fewer resources are devoted to litigation in Country A than in Country B.

B. Country A has higher equipment investment than Country B because of more favorable tax treatment; equipment investment has large externalities, so the difference in equipment investment translates into a large difference in income per worker.

C. Because of a government-sponsored religious campaign, the citizens of Country A become much more honest than those of Country B; as a result, output per worker is higher in Country A than in Country B.

D. None of the above.

6. Consider a cross-country regression of log output per worker on a measure of social infrastructure,

$$\ln(Y_i/L_i) = a + bSI_i + e_i. \quad (*)$$

A variable Z is a good instrument for SI if it is correlated with SI and if:

A. It is uncorrelated with the fitted residuals when we estimate (*) by OLS.

B. We know from auxiliary evidence that Z is not affected by social infrastructure,

C. If we regress Z on a constant and SI we obtain a coefficient that is not significantly different from zero, and so we cannot reject the null hypothesis that Z is not affected by SI.

D. (A) or (B).

E. (A) or (C).

F. (B) or (C).

G. None of the above.

EXTRA PROBLEMS (NOT TO BE HANDED IN / NO ANSWERS WILL BE PROVIDED)

7.–14. Romer, Problems 4.1, 4.3, 4.4, 4.7, 4.9, 4.10, 4.11, 4.12.