

EC111 Class 20

Question 1.

Suppose that aggregate output (national income) in an economy can be represented by the Cobb Douglas production function:

$$Q_t = AK_t^\alpha L_t^{1-\alpha} e^{rt}$$

where Q is output, K is capital, L is labour and t represents time (i.e. the year). A and r are constants and e is the exponential constant.

- a. Show that the growth rate of output can be expressed as a linear function of the growth rate of factor inputs and the technical progress term r .
- b. Show that this production function exhibits constant returns to scale.
- c. Suppose that $\alpha = 0.4$, and the rates of growth of output, capital and labour are, respectively 0.12, 0.10 and 0.05. What is the rate of total factor productivity growth?
- d. What factors can account for (some of) the total factor productivity growth observed in OECD countries?

Question 2.

- a. Is GDP per capita a good way of measuring the difference in living standards between rich and poor countries?
- b. Are poor countries poor because they have low levels of capital per worker?
- c. Should poor countries industrialise and if so how could they bring this about?