

## Homework Set One

1. (5%) Are there any parts of the syllabus/web pages you do not understand? You may either Type "No" or list any questions. Either answer is acceptable, I will respond to questions.
2. (5%) The Kingdom of Wurstphalia has a production function

$$Y = AK^{1/3}L^{2/3}$$

Initially,  $A = 10$ ,  $K=1000$ ,  $L = 1000$ . Compute (a) the capital labor ratio, (b) total output, and (c) output per capita.

3. (5%) Use the production function and the values of  $A$ ,  $K$  and  $L$  from the previous problem. Compute the change in output if (a)  $A$  doubles (b)  $K$  doubles and (c)  $L$  doubles.
4. (5%) Recalculate your answers to (2) and (3) assuming a production function of the form

$$Y = AK^{1/23}L^{1/2}$$

5. (5%) Use the production function and the values of  $A$ ,  $K$  and  $L$  from problem 2. Suppose  $A$  is growing at 2% a year, and population is growing at 1% a year. If the capital stock is growing at 1% a year, what will be the rate of growth of output per capita?
6. (5%) Use the production function and the values of  $A$ ,  $K$  and  $L$  from problem 2. Specifically  $A = 10$ ,  $K = L = 1000$ . Now suppose that half of the capital stock is destroyed in a sudden earthquake. (Fortunately no one is killed). Compute the decline in output per capita. Comment on why the decline in output per capita is less than 50%
7. (5%) Comment on the following statement. "There cannot be a relation between freedom and economic growth. We know that the United States started growing shortly after the American Revolution, even though estimates suggest that only 5 percent of the adult population at that time could vote."
8. (5%) Comment on the following statement. "We could have faster economic growth in the United States if Microsoft were forced to give up its monopoly on Windows"
9. (5%) Comment on the following statement. "After the end of the Communist economic system in the USSR (and indeed the end of the

USSR) real output fell”, showing that a market economy is less productive than a centrally planned economy.

10. (5%) Comment on the following statement. “The best investment one can make – in terms of promoting economic growth – for a poor country like Eastern Backwater is in a high quality engineering school”
11. (5%) Comment on the following statement. “Western Backwater has an excellent engineering school and its graduates immediately leave for high paying jobs in the US and the EU. If we want to promote WB’s economic growth, both the US and the EU should stop granting visas these graduates”
12. (5%) Comment on the following statement. “If a nation radically lowered its birth rate, there would be a dramatic reduction in its GDP because of unemployment in industries producing products like baby carriages, baby beds and the like.”
13. (40%) Senator Alicia Mustard has just hired you for her staff. She has just completed a “fact-finding” of West Backwater, where she was briefed by the Minister for Economic Growth. He explained some of the county’s problems. Senator Mustard has asked you to analyze these statements. Do you agree or disagree with them? Why or why not? Specifically, the Minister complained that.
  - We are locked out from new technology. Developed nations will not license their latest technology to us. We want support for a law requiring that nations license their technology to us.
  - The last group of experts from the World Bank told us to reform our laws. We need experts that will come prepared to lend us money, not lecture us about our outmoded legal systems.
  - Your experts tell us that market economies are the way to go, and that we should not interfere with private enterprise. These sentiments are echoed by the “big seven”, seven families that have dominated economic activity for so long. They make it impossible for anyone to compete with them. If private enterprise is so good, why has the economy floundered under their “leadership”?
  - Our birth rate is high, and I see no way we can have economic growth until we bring our birth rate under control.
  - As far as economic growth and development is concerned, the less government the better

- Paradoxically, a policy of eliminating income inequality will reduce economic growth because it will reduce the number of individuals with funds to invest in new businesses
- The Cobb-Douglas production function is no good. I know of no factory in America whose production is described by this function.
- If market economics are so good, why is China doing so much better than India?

14. (5%) Explain whether you agree or disagree with the following statement:  
If econometricians find a production function superior to the Cobb-Douglas production Function, it will be a boost to economic freedom.