Technology and Economic Growth

Additional Homework Problems

ECON 3133

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1. Assume that over a 10-year period the growth rate of capital is 4 percent, the growth rate of employment is 2 percent and the growth rate of real output is 5 percent. Calculate the growth rate of technology. Suppose that a permanent cut in the budget deficit increases investment, and the growth rate of capital rises by 1 percent. How much does the growth rate of output increase? Suppose that a tax reduction increases the supply of labor by 1 percent in one year? What happened to the growth rate of real output?

2. Suppose the target rate of long-run equilibrium per capita GDP growth is 1 percent per year. Labor input and population are expected to grow at 1 percent.

   a. What rate of GDP growth is required to achieve the target for per capita GDP growth?

   b. Using the growth accounting formula, what is the required growth in the capital stock necessary to achieve the target assuming technology growth of capital of 0.5? What is the required growth in the capital stock if there is no growth in technology?

3. Can a tax reform, which increases labor supply permanently, cause the growth rate of GDP to rise permanently? Explain.

4. Suppose that the labor supply schedule is vertical. What would be the effect of a change in the tax on labor?