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**Fall 2007, Intermediate Macroeconomics, section 2**

## **ECON 219 Mid-term exam II**

**Name:**

**General recommendations:**

- Read questions thoroughly and answer each.
- Work individually.
- There are five pages.
- No documentation, cell phones, pagers, calculators and bathroom breaks.
- You have until 9:15 and can leave early, if you wish.

1. [35%] Circle the correct answer to each of the following questions. Note that there may be several correct answers (or none).

- (a) Looking at the stable equilibrium of the Solow growth model, what stylized fact does it replicate?
- i. The capital/output ratio is steady;
  - ii. people migrate to rich places;
  - iii. consumption is procyclical;
  - iv. there is a large diversity in growth rates in the world.
- (b) Using notation used in class, the Solow residual can be defined as
- i.  $Y - aK - (1 - a)N$ ;
  - ii.  $Y - K - N$ ;
  - iii.  $\frac{Y}{F(K, N)}$ ;
  - iv.  $Y - (1 - d)K$ .
- (c) The Modified Golden Rule savings rate is the savings rate households prefer to choose given that they are impatient. How does it compare to the Golden Rule savings rate?
- i. It is higher;
  - ii. it is lower;
  - iii. it is the same;
  - iv. we cannot tell.

- (d) In an endogenous growth model with human capital, what are the consequences of an increase in mandatory schooling?
    - i. An increase in the labor supply;
    - ii. a decrease in labor productivity;
    - iii. a reduction in output;
    - iv. an increase in the output growth rate.
  - (e) Which of the following, if implemented in the Solow growth model, would not lead to a stable equilibrium?
    - i. A higher population growth rate;
    - ii. decreasing returns to scale in production;
    - iii. a savings rate that decreases with income;
    - iv. a constant marginal product of capital.
  - (f) What stylized facts does an endogenous growth model satisfy?
    - i. Total factor productivity contributes substantially to output growth;
    - ii. there is convergence;
    - iii. output per capita tends to grow;
    - iv. population growth is faster in poorer countries.
2. [35%] Let us use the Solow growth model to understand the consequences of the California wildfires.
- (a) Imagine that California is already at the stable steady state. Now the wildfires hit. What happens immediately to capital per capita, output per capita, savings per capita, consumption per capita?
  - (b) Then what happens thereafter, all the way to the long run, to the same variables?

- (c) Imagine again California is at the original steady state from before the wild-fires. The state typically enjoyed high immigration rates, but immigrants are now scared of moving there. According to the Solow growth model, what would the consequence be on the variables mentioned above in the long run?

3. [10%] Endogenous growth

- (a) What do we mean by endogenous sustained growth?

- (b) In endogenous growth models, what features can help in obtaining endogenous sustained growth?

#### 4. [20%] A Malthusian economy

(a) Explain what motivated Malthus to build his model economy.

(b) In this model, what measures the standard of living? Why use this, and not something we used earlier in class with the business cycle model?

(c) Explain why his proposal of postponing marriages would have worked to increase the standard of living.

5. **[Bonus: 10%]** Industrialized countries are going through a period of lower population growth rates. Discuss what this implies for the Golden Rule savings rate, comparing the stable equilibrium before and after. Discuss how capital per capita changes during the transition (which includes a change in the savings rate). Draw a graph of the savings rate and of capital per capita through time.

Nothing on this page will be considered for your grade.