Department of
ECONOMICS
THE UNIVERSITY OF UTAH

University of Utah

Department of Economics

PhD Qualifying Examination in Macroeconomics

Tuesday, June 11, 2024

9am – 1:30pm

Please write legibly with a dark pen or pencil and use only the front side of the paper provided.

You may answer these questions in any order, but be sure to label each answer with Section __, Question ___.

Be sure to number each page of your answer document, and at the end include the total number of pages.

Any questions about testing protocol can be directed to the proctor.

Macroeconomics I Qualifying Exam

June 11, 2024

Harrod Problems (33 points)

1. Derive y_w or the "warranted rate of growth" in Harrod's growth model given the following:

$$I_t = \Delta K_t = a_1 \Delta Y_t^e$$
$$S_t = sY_t$$
$$a_1 = \frac{K_u}{Y_t}$$

   Where:

   - a_1 = capital-output ratio
   - I_t = investment in current period
   - Y_t = output in current period
   - Y_t^e = expected output in current period
   - K_t = capital stock in current period
   - S_t = savings in current period
   - s = savings rate

2. What are the other two growth rate concepts in Harrod? Explain in words.

3. What is the First Harrod Problem? Explain in words and math.

4. What was the neoclassical response to the First Harrod Problem? Explain in words.

5. What was Kaldor's suggested solution to the First Harrod Problem? Explain in words.

6. What is the Second Harrod Problem? Explain in words and graphs.

7. What is ONE possible solution economists working in the Marxian tradition have proposed to the Second Harrod Problem? Explain in words and graphs.

8. What is ONE possible solution economists working in the Kaleckian tradition have proposed to the Second Harrod Problem? Explain in words and graphs.

9. Many development economists have recommended a strategy of increasing national savings rates in order to accelerate economic growth. In Harrod's growth theory, which growth rate is increasing by raising a country's propensity to save, and is that a good policy to pursue? Why or why not? Explain in words.

10. Do you think the Harrod Problems are real? Do they warrant this much attention from heterdox macroeconomists? Explain in words.

Keynesian Paradoxes (33 points)

1. What is the paradox of costs? Explain in words.

2. What is the paradox of thrift? Explain in words.

3. What is the widow's cruse? Explain in words.

4. If the investment function is $g = h_0 + h_1 u + h_2 \pi$, where $h_0, h_1, h_2 > 0$, does this model exhibit the paradox of costs, the paradox of thrift, and the widow's cruse? Assume the same savings function for all the investment functions below:

$$\sigma = sr$$
$$r = \frac{\pi u}{a_1}$$

where:

- g = investment function
- σ = savings function
- a_1 = capital-output ratio
- u = utilization rate
- π = profit share
- s = savings rate out of profits
- r = profit rate
- A = technology

5. If the investment function is $g = A\pi^{\alpha}u^{\beta}$, where $A > 0$, $0 < \beta < 1$ and $\alpha > 1$, does this model exhibit the paradox of costs, the paradox of thrift, and the widow's cruse?

6. If the investment function is $g = f_0 + f_1 r$, where $f_0, f_1 > 0$, does this model exhibit the paradox of costs, the paradox of thrift, and the widow's cruse?

7. Do you think it is useful to classify economies as wage- or profit-led? Explain in words.

Business Cycles (33 points)

1. What is the "profit-squeeze" model of the business cycle? Explain in words, maths and graphs given the following:

$$\hat{\psi} = (-q + \gamma) + \xi$$
$$\hat{e} = \frac{1 - \psi}{a_1} - (n + q)$$

where:

- ψ = labor share
- e = employment rate
- a_1 = capital-output ratio
- n = labor force growth rate

- q = labor productivity growth rate
- $\xi, \gamma > 0$

2. What conditions are necessary for a stable neo-Goodwin cycle assuming Keynesian stability condition holds ($v_1 < 0$) and aggregate demand is profit-led ($v_2 < 0$)? Explain in words, maths and graphs given the following:

$$\hat{u} = \nu_0 + \nu_1 \ln u + \nu_2 \ln \psi$$
$$\hat{\psi} = \omega_0 + \omega_1 \ln u + \omega_2 \ln \psi$$

where:

- $\nu_0, \omega_0 > 0$
- $\nu_1, \nu_2 < 0$
- u = capacity utilization rate

3. What conditions are necessary for an unstable neo-Goodwin cycle? Explain in words, maths and graphs.

4. How are neo-Goodwin cycles different from the original Goodwin model?

5. Do you think original or neo-Goodwin models are an adequate explanation for business cycles? Explain in words.

Section 2

2024 - Econ 7008 Qualifying Exam Question

How has growth theory evolved from Harrod to Solow? In your answer make sure to address:

i. What was Harrod's (Domar's) 'knife-edge' problem and how did Solow redefine and address it?

ii. How did Solow's theory change the conclusions and pertinent questions of growth theory?

iii. What are Solow's key assumptions on the nature of technology and technological change and how do they matter.

iv. What is the "dynamic inefficiency" implied in Solow's model, and how was Ramsey model made use of to deal with the problem?

v. Respectively, in Solow and Ramsey models, what can explain the difference between poor and rich countries?