Homework Assignment 2

Total points: 90 Due date: 05/10/2018

- You know the rules.

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1. Consider the following function:

$$Y = f(L, K)$$

   (a) If the production is scaled up by a constant ω, show what increasing, decreasing and constant returns will look like above (in terms of inequalities). (5)

   (b) Now consider the form $Y = aL^{\alpha}K^{\beta}$. Show how the above 3 cases look in this specific form. Show a few lines. (5)

   (c) Derive $y = ak^{\beta}$. What additional assumption do you need form the regular form of $Y = aL^{\alpha}K^{\beta}$? What does this assumption imply? (5)

   (d) Define total factor productivity. Which part of the equation represents it? (5)

   (e) Now consider a production function in which $Y_t = aL_t^{\alpha}K_t^{\beta}$. Suppose that $L_t = L_{t-1} + \eta_t$ where $\eta_t \in (0, 1)$ and $K_t = \gamma K_{t-1}$. Note that $\gamma > \pi$ and $K_0, L_0 = 2$. Suppose we plotted y_t and k_t. Would it have similar characteristics as the traditional y vs k graph? (10)

2. Consider he convergence of GDP hypothesis.

   (a) In the convergence equation, we find that a poorer country can only converge to a richer country in terms of GDP if the poorer country is growing faster. If instead of GDPs converging, however, I proposed that growth rates, converge over

time. Would it be possible for the GDP of the two countries to also converge. Show me an example (No stories. Give me either graphs, functions or a numerical example). (5)

(b) If the growth over time is monotonically increasing or decreasing for both countries, is this still possible? Consider the case of weak and strong monotonicity separately. (10)

3. Explain all three types of unemployment with definitions and examples (10)

4. Try to derive the equation 15 in your slides on aggregate demand when taxes are present. If it can't be done and you reach an impasse, report why. (10)

5. Explain in detail (start from scratch) how we get the downward sloping demand for money. (10)

6. Explain liquidity trap in detail. (5)