Faculty of Business and Economics
Department of Economics
THE UNIVERSITY OF MELBOURNE

ECON40002
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Advanced Macroeconomics
Tutorial #1

1. **Group presentations.** If you have not already done so, please send me an email with your group presentation preferences.

2. **Matlab**. If you have a laptop, bring it to class so that the tutors can assist you in getting Matlab up and running. I think it'd be advisable if at least one person from each group brings a laptop, but probably the more people who get sorted out the better. To obtain a copy, please follow the installation instructions here:

   https://github.com/resbaz/lessons/blob/master/matlab/unimelb_matlab_install.md

   If you need additional help, please let me know asap.

3. **Solow-Swan model.** Consider a standard Solow-Swan model in continuous time with Cobb-Douglas production function $y = k^\alpha$, constant savings rate s, depreciation rate δ, productivity growth g and employment growth n.

   (a) Derive expressions for the steady state values k^*, y^*, c^* in terms of the model parameters s, δ, g, n and α.

   (b) Use a diagram to explain how an increase in s affects k^*, y^*, c^*. Does this change in s increase or decrease long run output and consumption per worker? Explain.

   (c) Use a diagram to explain how an increase in α affects k^*, y^*, c^*. Does this change in α increase or decrease long run output and consumption per worker? Explain.

4. **Linear production function.** Suppose the production function is linear $y = k$ and for simplicity suppose no productivity or employment growth, $g = n = 0$. Does the Solow-Swan model have a steady state capital stock in this setting? Why or why not? Explain the dynamics of $k(t)$ in this economy. How do these dynamics depend on the values of s and δ? Explain. What standard assumptions about the production function does this example violate?

5. **Inada conditions.** Consider a production function in intensive form $y = f(k)$. Briefly explain the role played by the Inada conditions $f'(0) = \infty$ and $f'(\infty) = 0$ in analyzing the Solow-Swan model. In particular, suppose $f'(k) > 0$ and $f''(k) < 0$ but that the Inada conditions are *not* satisfied. What possibilities does this lead to?