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Fall 2010, Intermediate Macroeconomics, section 4

ECON 2202 Extra credit problem

This problem is due December 2, 2010, in class.

For this problem, you will be working with a simplified student version of the Kydland-Prescott (Econometrica 1982) seminal real business cycle model, one of the two works Kydland and Prescott got the Nobel Prize for in 2004. This model differs essentially in the following ways from the two-period model with investment we used in class:

1. the horizon is infinite, not two periods;
2. there is a permanent component to total factor productivity (technology) shocks: there can be temporary shocks that last only one period and permanent ones that are highly persistent;
3. investment does not necessarily become productive (as capital) the next period, this is what they call *time-to-build*;
4. the model also includes business inventories;

To complete this task, you need to connect to an experimental website in Norway at `http://melon.uib.no/moodle/`. The steps are:

1. Click on Econ2202
2. Create a new account. Make sure to use your UConn email address and indicate Storrs as your location.
3. Follow instructions in the email you get.
4. You will need an enrolment key. Use `econ2202`.
5. You are now ready to conduct experiments ("Ex. 2: Run the business cycle model"), or explore the other parts of the website.

When answering the questions below, document everything with printouts. You do not need the so-called *impulse responses*, but if you are curious, these measure the reaction over time to a one-time shock in the first period.

1. First run the following experiment: Use T in the 60–160 range, one quarter for the time-to-build of capital (as in the textbook model), market work time in the 0.2–0.33 range, risk aversion (the curvature of the indifference curve in the (c, c') space) somewhere between 1.5 and 3, a labor income share of 0.5 to 0.75, and inventories between 10 and 35% of GDP. Let shocks be temporary only. Compute the statistics for this benchmark.

2. Compare your results with the stylized facts. What are those we can now look at but could not with the model seen in class? How does the model fit the stylized facts?

3. To see what various changes to this benchmark can induce, run now another experiment: Now have only permanent shocks. What statistics change? Be careful about what statistics you should be looking at, especially in the light of the stylized facts, as you have now obviously changed the volatility of output. Can you explain these changes with the model we saw in class?

4. Now increase risk aversion to something in the 5 to 8 range in the experiment with permanent shocks. What changes? Why?

Make sure to document and explain what you are doing.

NB: If you want to enter parameter values of zero, enter a very small number, say 0.0001. This is a bug, not a feature...

NB2: If you get an ouput like this: ******, this means most likely you got a number very close to zero.