

Assignment 6

This assignment will be graded out 30 points possible. Your final assignment average, which is weighted 30% of your final average, will equal the average of all of your assignment grades. I encourage you to work independently, since these assignments are designed to help you prepare for the exam and final project. If you have any questions, please see me or the TA for help. This problem set is due on **Wednesday, November 29 at the beginning of class**. Please email your MATLAB code to the TA and submit any written portion to him in class.

This assignment goes through the process of quantifying the impact of the 2017 corporate tax reform legislation using a dynamic model. We will focus on the corporate income tax rate cut and investment expensing components of the legislation. Begin with the following equation from the notes (ignoring labor demand):

$$V(z, k) = \max_{k'} zk^\alpha - C(k, k') - (k' - (1 - \delta)k) - \tau_c(y(z, k, k')) + \frac{1}{1+r} E[V(z', k')], \quad (1)$$

where

$$y(z, k, k') = zk^\alpha - C(k, k') - \delta k - \phi \max\{(k' - (1 - \delta)k), 0\}. \quad (2)$$

Here, we will assume that capital adjustment costs take the convex form described in Adda and Cooper (2003):

$$C(k', k) = \frac{\gamma}{2} \left(\frac{k' - (1 - \delta)k}{k} \right)^2 k \quad (3)$$

The vector of productivity shocks (z) and corresponding Markov matrix are available in the files titled *productivity_shocks.xls* and *markov_matrix.xls*, respectively. Let $\alpha = 0.7$, $\gamma = 0.05$, $\delta = 0.085$, and $r = 0.03$. Assume in the benchmark economy that the corporate income tax rate is proportional $\tau_c = 0.35$ and the investment expensing value $\phi = 0.75$. I recommend using log-spacing for the capital grid as in the previous case with 50 grid points and bounds of 0.001 and 1500.

1. Consider a decline in the corporate income tax rate from $\tau_c = 0.35$ to $\tau_c = 0.15$, and suppose that the increase in available items for investment expensing increased the parameter from $\phi = 0.75$ to $\phi = 0.965$. Solve for the percentage change in the following aggregate variables following the corporate tax reform: equity ($V(z, k)$), capital, dividends, gross profits (which equal total output), investment, and corporate income tax revenue.
2. As Chair of the Council of Economic Advisers, you have been asked to communicate these results to the President. Write a brief document (i.e., two or three paragraphs) describing the anticipated economic impact of the legislation on U.S. corporations and the stock market.