

ECON 5760
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Problem Set 7

Problem 1. Write a m-file called DMstat.m that constructs the DM-statistic discussed in class for an arbitrary set of controls X and y .

Problem 2. Consider the benchmark model with shocks to output with $u(C_t) = \frac{C_t^{1-\eta}-1}{1-\eta}$ and $F(Z_t, K_t) = Z_t K_t^\alpha$ with the resource constraint $f(K_t) = C_t + K_{t+1}$ where $f(K_t) = F(Z_t, K_t) + (1 - \delta)K_t$.

a. Write a program that is capable of evaluating the RHS of the Euler equation for a value ϵ as presented in class:

$$\phi(K, Z, \sigma, \epsilon) = \beta [\hat{h}^C(\hat{h}^K(K, Z, \sigma), e^{\rho Z_t + \sigma \epsilon}, \sigma)]^{-\eta} [1 - \delta + \alpha e^{\rho Z_t + \sigma \epsilon} (\hat{h}^K(K, Z, \sigma))^{\alpha-1}]$$

Note that to do this you must be able to interpolate the policy function $\hat{h}^K(K, Z, \sigma)$ to off-grid values for Z and K . To accomplish this, you can use bilinear interpolation. Run the code simplevalueitstoch.m which will provide the policy function $\hat{h}^K(K, Z, \sigma)$. Also notice that you should increase $\lambda = 10$ (for the AR(1) discrete approximation) before solving for the optimal policy function.