LSE Macroeconomics Summer Program
Part II: Heterogeneous Agents
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Tuesday Additional Assignment

1 Objective

Show that the R^2 says very little about accuracy. That is a law of motion for a variable can have a very high R^2 and still generate a very different time path than the true law of motion.

2 Assignment

The external function `motion.m` contains the true law of motion. The idea is that you do NOT look at this file. The counterpart is the cross-sectional panel that you can calculate but you do not fully know the functional form. The Matlab program `main.m` generates a time series for the true aggregate capital series and stores them in the vector `"k"`. You have to do the following.

1. Run a linear regression to obtain a linear prediction formula using lagged `k` and the productivity shock as the explanatory variables. You should get a very high R^2. Note that the only thing you have to do is to specify the matrix with explanatory variables and the vector with the dependent variable.

2. Now consider the following experiment.

   (a) Take a series for the productivity levels, $\{z_t\}_{t=1}^{T}$ and an initial value for the capital stock as given.

   (b) Generate a series for k_t using the true law of motion.

   (c) Generate a series for k_t using your approximating law of motion. Doing this you can *of course* not use the true law of motion in any way.

   (d) Plot the two generated series in one graph.

   (e) If you truly have an accurate law of motion you should not be able to distinguish them. The program generates this plot for you.