

Statistics 434: Bullet Points for Day 2 Noise, AR(1), S-Plus, Estimation, and Simulation

We begin with an exploration of the normal noise model, then we look at its simplest alternative, the AR(1) model. This gives us our first encounter with the notion of stationarity and “long run distribution” — which is a trickier concept than you might guess. We get a formula for the long run variance in an AR(1) model and find that it has an intuitive financial interpretation. We then add more tools to our S-Plus tool kit.

- Noise, the Sturdy Strawman. Independence – the crucial point. Normality — a common, but curious assumption
- AR(1) Its specification. Its “distribution” and the influence of the “starting value.” The “long-run” and first brush with ergodicity.
- Stationarity — Simplest Necessary Conditions
- Consequences of AR(1) Stationarity
 - Variance distribution (under stationarity)
 - Extract real intuition from a very simple model
- S-Plus
 - Installation issues? (with a Reminder about Finmetrics)
 - EDA Tools
 - Vectors, Selectors, and Manipulations
 - Looping and construction of functions
- Discussion of the newly assigned Homework 1. Reminders about website resources.

TAKE-AWAYS AND ACTION ITEMS:

This class introduces several important ideas — especially the idea of stationarity and the idea of a long-run distribution. These are pillars of the theory of time series. Sometimes they are shaky pillars, but they are pillars nonetheless.

You have your first assignment, and it should be relatively straightforward. If you feel inspired, you might ask yourself “How can I take this a step further — even a small step further?”

Also, please give some thought to how you write up your homework. This is not so much an issue this time, but as we move toward data analysis, the issue of clear and careful writing starts to loom large.