Statistics 434: Bullet Points for Day 21

Exponentially Weighted Moving Averages
Filtering, Smoothing, and "Momentum"

In the practical world of financial time series, you have to make many decisions about what data you care about. Moreover, in many cases, it is sensible to care more about recent data than about older data. This leads one to the notion of an Exponentially Weighted Moving Average (or EWMA). These have many uses; some are easily justified and some are more difficulty to justify.

In particular, EWMA are widely used by technical analysts, a clan whose number waxes and wanes — but never disappears. Many academicians hesitate to acknowledge the existence of technical analysts, yet, at one time or another, almost everyone has checked to see if some holding is above or below its 200 day moving average. In fairness, one should also admit that even betas and Sharpe ratios are technical tools, though they certainly have a much better pedigree (and record) than the more fanciful extremes of technical analysis, such as "head and shoulder patterns."

- Discuss of "Big Picture" issues — what's left to learn
- EWMAs
  1. Benefits: logical and computational
  2. Theoretical optimality in some contexts
  3. Relation to simple moving averages and $\lambda = (n-1)/(n+1)$
  4. EWMA() ... start="average" vs start="first"
- Woofers, Tweeters, Oscillators and MACD
  1. Some logic
  2. Fascinating Pictures
  3. Works less well than it "feels" like it should
- A sea of technical analytic possibilities
  1. Measures of momentum
  2. Measures of other kinds
- More discussion of "risk adjusted" returns
- Final Project Design (Styles, Domains, Methods, Scope)
- Pointer to Tukey's "Sunset Salvo"
- Web resources (as time permits)