

Sports Econometrics

Controls

Control Variables

- To study a specific issue we need to control for other factors. Omitted Variable Bias
- For example, if forecasting home runs then we need to account for elevation (see [Colorado Rockies](#)).
- For example, if forecasting passing yards then we need to account for snow/rain/weather (see [Buffalo Bills](#)).

Fixed Effects

- Fixed Effects are Dummy variables for year, conference, team, player etc....
- Pros
 - Super Easy to use
 - Super Effective as Controls (no omitted variable bias)
- Cons
 - Wastes Degrees of Freedom
 - Tells you nothing (rarely reported)

Some Examples “Excel Examples” (patent pending)

- Sample Data Sets
- OremOwlz and Pioneer Day Dummy
- College_Rev_Exp and Conference Dummies
- HS_QBs and minority
- What are your “i” and “t” dimensions

Auto-Regressive Controls (AR)

- Sometimes the best way to control for factors is to include last period's outcome.
- $BattingAvg_{i,t} = B_1 BattingAvg_{i,t-1} + B_2 X + e$
- AR Coef., B1, should be between -1 and 1

Interpreting the AR Coef.

- Insignificance
 - If Coefficient = 0 then outcomes are unrelated over time (random, coin flip)
- Persistence
 - If Coefficient approaches 1 then outcomes are very persistent (duration of a soccer match)
- Back and Forth
 - If Coefficient approaches -1 then outcomes bounce back and forth (like the tide)

Interpreting the AR Coef.

- The Unit Root
 - If Coefficient = 1 OR -1
 - Process is random, coin flip
 - AR must be excluded from the regression