THE UNIVERSITY OF CHICAGO
Booth School of Business
Business 41912, Spring Quarter 2020, Mr. Ruey S. Tsay

Outline of Lecture 4

1. Model selection or variable selection:
   - All possible regressions: $2^p - 1$
   - Stepwise regression: forward selection and backward elimination
   - Mallow's C_p
   - AIC & BIC
2. $p > n$: big p/small-n problem
   - Penalized linear regression: Ridge regression (Hoerl and Kennard, 1970).
   - LASSO linear regression and its variants (Elastic net, Group Lasso, Fused Lasso, adaptive Lasso, SCAD, etc.)
   - Principal component linear regression
   - Partial least squares
3. Forecasting: ℓ_2-boosting
4. Omitted variables: biased estimates