

Extra SS F-tests (10.3)

- A regression with $K - 1$ X variables requires K parameter estimates: one β for each X plus β_0 .
- Consider two *nested models*: two models, one a subset of the other.
- Test whether a complex model, with K parameters, significantly improves upon a simpler model with $K - H$ parameters. ($0 < H < K$) The complex model has H fewer parameters than the simpler model. Assume that there are N observations.
- See Display 10.12 on p. 274, Display 10.10, p. 271.

F-tests for sets of coefficients

$$ESS = RSS_{K-H} - RSS_K$$

$$\hat{\sigma}^2 = RSS_K / (N - K) \quad (= \text{estimate of } \sigma^2 \text{ from complex model})$$

$$F = \frac{ESS/H}{\hat{\sigma}^2}$$

Compare F above to quantiles of the F -distribution on $H, N - K$ df.