Chapter 5

Consistency :

No asymptotic bias under slightly weaker assumptions.

$$E(u) = 0$$

$$\text{corr.}(x, u) = 0$$

For unbiased $\hat{\beta} \rightarrow$ as $n \uparrow$ dist. of $\hat{\beta}$ more concentrated around β.

σ^2 : $\dfrac{SSR}{n-(k+1)}$ $\quad \dfrac{SSR}{n-2} \rightarrow$ unbiased estimator of σ^2

$\dfrac{SSR}{n} \longrightarrow$ biased but consistent estimator of σ^2

Asymptotic Normality :

$u \longrightarrow$ Normal

$y \mid x_1, x_2, x_3, \ldots, x_k \longrightarrow$ Normal

often not the case.

e.g. $y \rightarrow$ indicator of employment

\# cigs., \# kids

Under the ass$\stackrel{n}{:}$s for unbiasedness &
homoskedasticity

$\stackrel{a}{\sim}$: asymptotically distributed as

$$\frac{\hat{\beta}_j - \beta_j}{se(\hat{\beta}_j)} \stackrel{a}{\sim} \text{Normal}(0,1)$$

$$\sim t_{n-k-1}$$

F statistics also have approximate F dist. with large n.