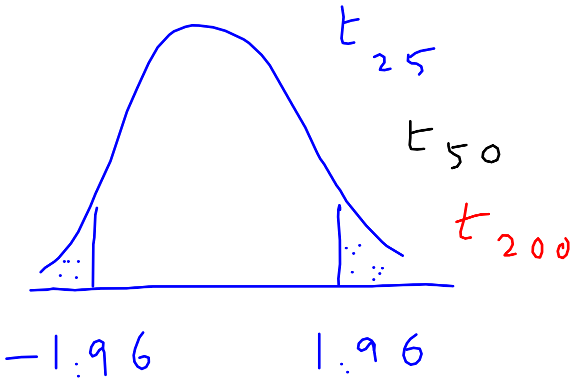
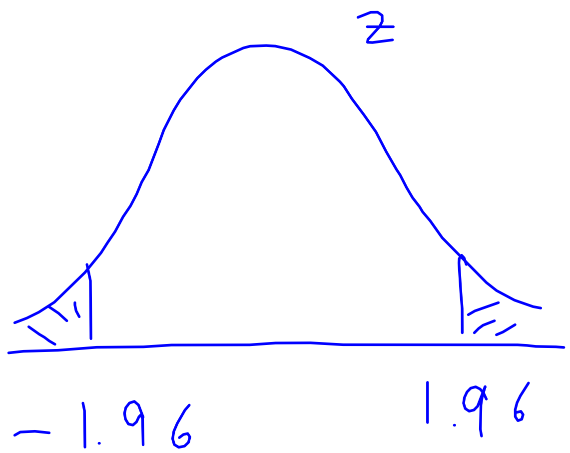


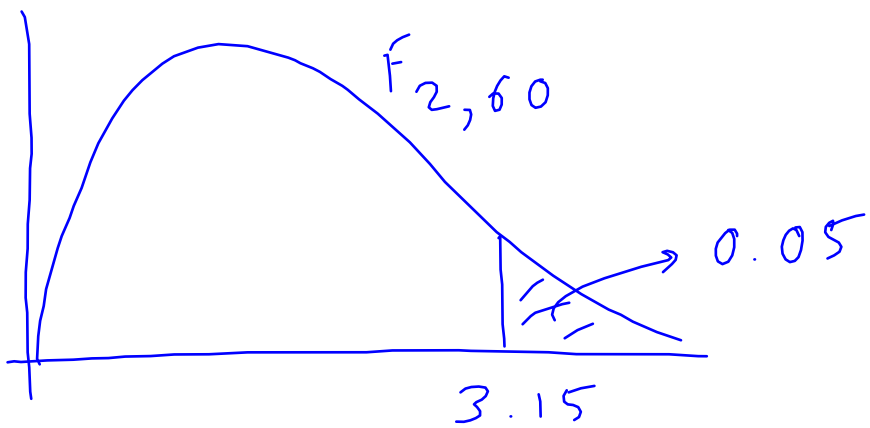
$\square = 0.061$

$\square = 0.056$

$\square = 0.051$



$\square = 0.05$



Chapter 5

Consistency :

No asymptotic bias under slightly weaker assumptions.

$$E(u) = 0$$

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

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

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

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

Asymptotic Normality:

$$u \longrightarrow \text{Normal}$$

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

often not the case.

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

cigs., # kids

Under the ass$\frac{n}{?}$s for unbiasedness &
homoskedasticity

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

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

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

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

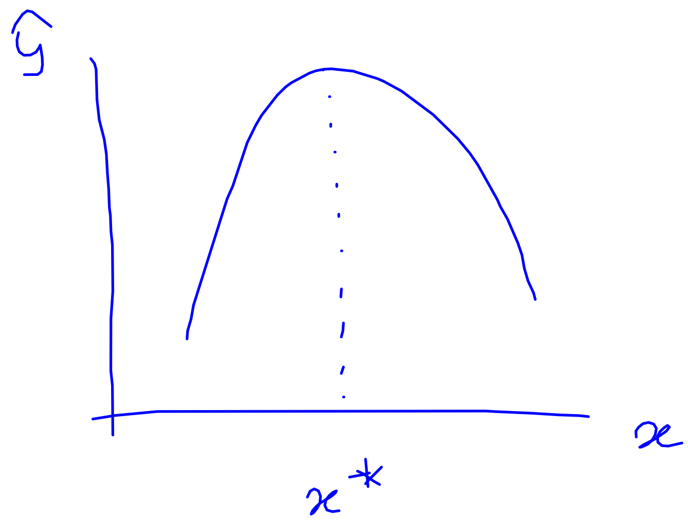
Chapter 6

Quadratic functions

$$y = \beta_0 + \beta_1 x + \beta_2 x^2 + u$$

$$\frac{\Delta y}{\Delta x} = \beta_1 + 2\beta_2 x$$

$\hat{\beta}_1 > 0$, $\hat{\beta}_2 < 0$



Turning pt. (max.)

at $x^* = \left| \frac{\hat{\beta}_1}{2\hat{\beta}_2} \right|$