

Notes, Mar 29th, 2021

$$y = \theta d + f(x) + \varepsilon$$

if we assume f is linear, then

$$y \sim X \Rightarrow \hat{y}(x)$$

$$d \sim X \Rightarrow \hat{d}(x)$$

$$\tilde{y} = y - \hat{y} \quad \tilde{d} = d - \hat{d}$$

$$\tilde{y} \sim \tilde{d} \Rightarrow \underline{\theta} \stackrel{\text{equiv. when } f \text{ is linear}}{\Leftrightarrow} y \sim \theta d + X'\beta + \varepsilon$$

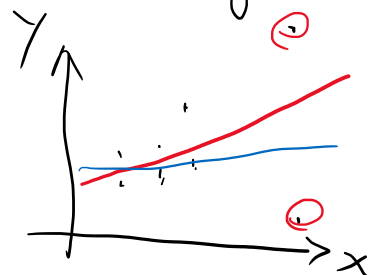
f non-linear!

OLS vs WLS (weighted least squares)

$$y \sim X \quad \text{OLS}$$

$$\hat{\theta} = (X'X)^{-1} X'y$$

$$\hat{\theta} = (X' \underbrace{W}_{\text{weighted matrix}} X)^{-1} X' W y$$



elasticity y on $x \Rightarrow \frac{\partial \log y}{\partial \log x} \Leftrightarrow \frac{\partial y}{\partial x} \frac{x}{y}$