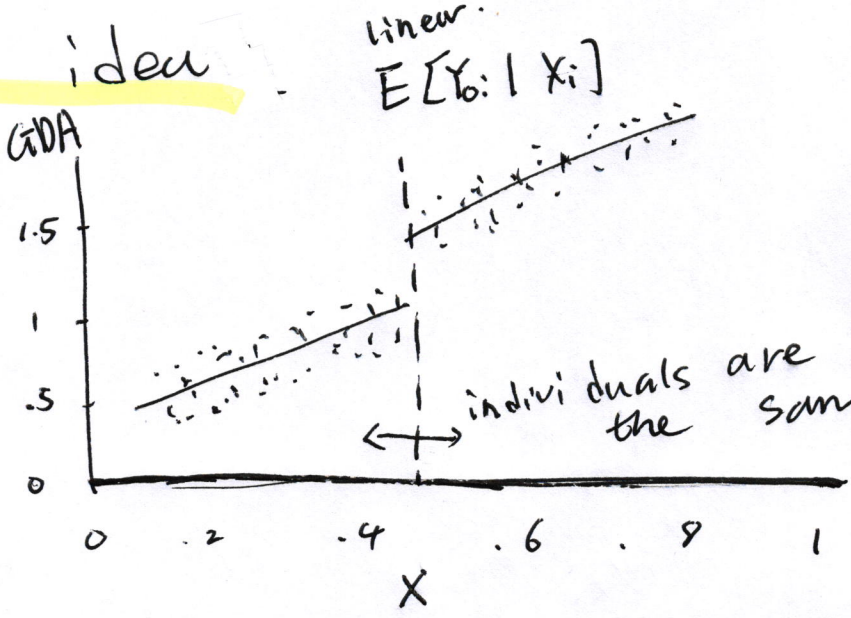
Regression Discontinuity.

Motivation: i.e. Scholarship V.S. GPA ?

- Threshold on the PSAT score.
- causal effect of the program.

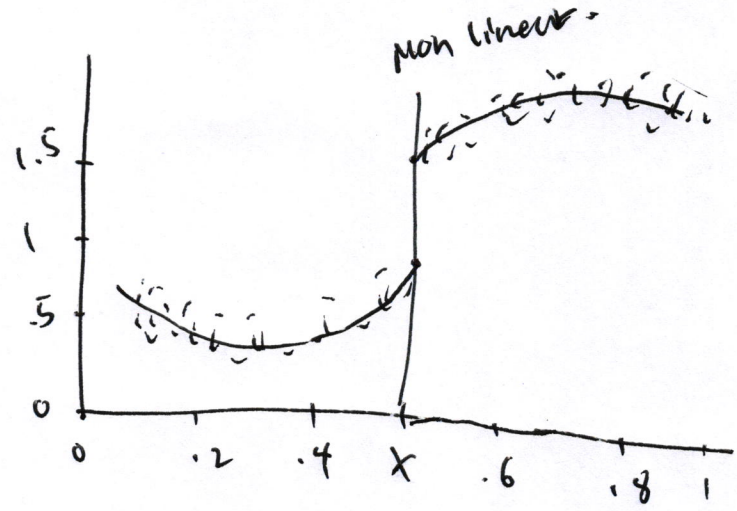
Basic idea.



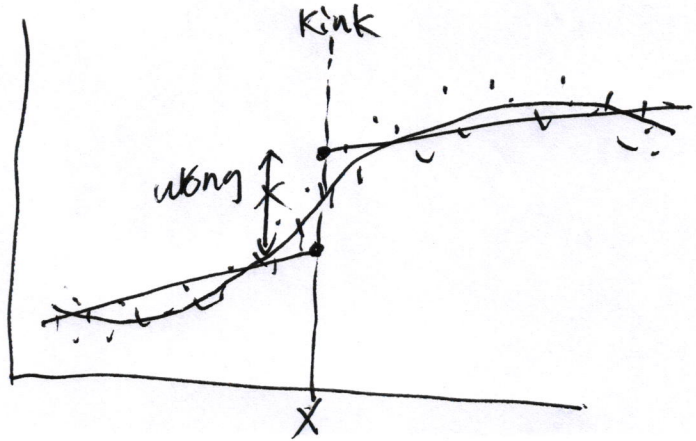
Best case Scenario.

⇒ In this Region the difference in outcome is only due to the cut off.

RD(V)



RP(X)



Implementing RD.

case 1 : Pure linear

$$y = B_0 + B_1 X + B_2 I(X > X_0) + e$$

↑ estimates of program effect. (treatment)

case 2 : polynomial

$$y = B_0 + B_1 X + B_2 X^2 + B_3 X^3 + B_4 I(X > X_0) +$$

case 3 : Different trend on either side.

$X' = X - X_0$ distance to cut off.

$$y = B_0 + B_1 X' + B_2 I(X > X_0) X' + B_3 I(X > X_0) +$$

Problems

① Another program is active that uses the same threshold

② The underlying relationship is jumpy.

③ Individuals are able to manipulate X to push themselves over the threshold.

Fuzzy Discontinuities

(Not publically announced threshold).

⇒ Use 2SLS with the IV being dummy for being above the threshold.