

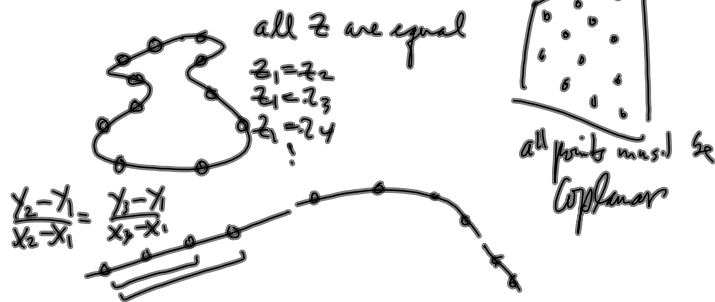
Lecture 37 Constraints 37-1

Condition equations } contains at least 1
 observation equations } observation

constraint equations contains parameter &
 maybe constants.

Two cases where we use constraints

I can solve for parameters, but want to impose geometric relationship among parameters



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horizontal & 90° 37-2

II cannot solve problem w/o constraint



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develop LS solution: conditions and constraints 37-3

n, n_0, m' independent parameters

if add 1 new, dependent parameter

$$n = m' + 1$$

need 1 new constraint equation

if add 2 new, dep. parameters

$$n = m' + 2$$

need 2 new constraint equations

!

$$\left. \begin{array}{l} C = r + m' \\ C + S = r + \frac{u' + s}{n} \end{array} \right\} \boxed{C + S = r + m}$$

$$\begin{aligned} \delta &= \# \text{ dependent parameters} \\ &= \# \text{ constraint equations} \end{aligned}$$

$$\begin{array}{rcc} A & v & + \\ c, n & n, 1 & \\ B & \delta & = f \\ c, m & m, 1 & \\ C & \delta & = g \\ s, n & n, 1 & \end{array}$$

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to impose LS criterion

37-4

$$\Phi' = v^T W v - 2k^T (Av + B\delta - f) - 2k_c^T (c\delta - g)$$

objective function

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