

אל סעיף 2

1 סעיף 1

$$b = \begin{pmatrix} -0.1 \\ 1.5 \end{pmatrix}$$

$$Y = \beta_1 + \beta_2 X + u$$

התוצאה של המדידה

$$\hat{V}(b) = 0.5 \begin{pmatrix} 0.02 & -0.10 \\ -0.10 & 1. \end{pmatrix}$$

$$\bar{X} = 0.10$$

$$\bar{Y} = 0.05$$

$$R^2 = 0.0439$$

$$H_0: \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \end{pmatrix} = \begin{pmatrix} 0 \\ 2 \end{pmatrix}$$

. 1

$$F = \frac{(Rb-r)' [R(X'X)^{-1}R']^{-1} (Rb-r) / m}{e'e / (n-k)} = 2.5 < F_{2, 100-2, 0.99} = 4.79$$

Ho פתור לא

$$H_0: \begin{pmatrix} 1 & 0 \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \end{pmatrix} = 0$$

$$t = \begin{pmatrix} 1 & 0 \end{pmatrix} \begin{pmatrix} -0.1 \\ 1.5 \end{pmatrix} - 0$$

$$\sqrt{\frac{49}{100-2} \begin{pmatrix} 1 & 0 \end{pmatrix} \begin{pmatrix} 0.02 & -0.10 \\ -0.10 & 1 \end{pmatrix} \begin{pmatrix} 1 \\ 0 \end{pmatrix}}$$

Ho פתור לא

$$t_{100-2, 0.005} = \pm 2.576$$

$$H_0: \begin{pmatrix} 0 & 1 \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \end{pmatrix} = 2$$

. 2

$$t = \begin{pmatrix} 0 & 1 \end{pmatrix} \begin{pmatrix} -0.1 \\ 1.5 \end{pmatrix} - 2$$

$$\sqrt{\frac{49}{100-2} \begin{pmatrix} 0 & 1 \end{pmatrix} \begin{pmatrix} 0.02 & -0.10 \\ -0.10 & 1 \end{pmatrix} \begin{pmatrix} 0 \\ 1 \end{pmatrix}}$$

Ho פתור לא

$$Y | X_0 = (1 \ 0.5) \quad -5 \text{ נקודות}$$

$$-0.1 + 1.5 \cdot 0.5 \pm 1.96 \sqrt{0.5 \left[1 + \begin{pmatrix} 1 & 0.5 \end{pmatrix} \begin{pmatrix} 0.02 & -0.10 \\ -0.10 & 1 \end{pmatrix} \begin{pmatrix} 1 \\ 0.5 \end{pmatrix} \right]}$$

$$0.65 \pm 1.5$$

1 . 4

$$H_0: \begin{pmatrix} 0 & 1 \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \end{pmatrix} = 0$$

. 5

$$t\text{-stat} = 2.12 < t_{100-2, 0.005} = 2.576$$

$$F\text{-stat} = \frac{R^2 / (k-1)}{(1-R^2) / (n-k)} = 4.5 < F_{1, 100-2, 0.01} = 6.85$$

פרמטר - 11 פרמטר מרוכב

2 פרמטר מרוכב

$$Z = (Y \quad 1 \quad X)$$

$$Z'Z = \begin{pmatrix} Y'Y & Y'1 & Y'X \\ 1'Y & 1'1 & 1'X \\ X'Y & X'1 & X'X \end{pmatrix} = \begin{pmatrix} 100 & 10 & 25 \\ 10 & 20 & 0 \\ 25 & 0 & 75 \end{pmatrix}$$

$$1. \quad b = (X'X)^{-1} X'Y = \begin{pmatrix} 20 & 0 \\ 0 & 75 \end{pmatrix}^{-1} \begin{pmatrix} 10 \\ 25 \end{pmatrix} = \begin{pmatrix} 1/2 \\ 1/3 \end{pmatrix}$$

$$2. \quad R^2 = 1 - \frac{e'e}{y'y}$$

$$e'e = Y'Y - b'X'Y = 100 - \begin{pmatrix} 1/2 & 1/3 \end{pmatrix} \begin{pmatrix} 10 \\ 25 \end{pmatrix} = 86\frac{2}{3}$$

$$y'y = Y'Y - n\bar{Y}^2 = 100 - 20 \cdot \left(\frac{10}{20}\right)^2 = 95$$

$$R^2 = 0.0877$$

$$3. \quad H_0: \rho^2 = 0$$

$$H_1: \rho^2 > 0$$

$$F = \frac{0.0877 / (2-1)}{(1-0.0877) / (20-2)} = 1.73 < F_{1,18,0.05} = 4.41$$

... איננו מסר

$$4. \quad H_0: (1 \ 0) \begin{pmatrix} \beta_1 \\ \beta_2 \end{pmatrix} = 0$$

$$t = \frac{(1 \ 0) \begin{pmatrix} 1/2 \\ 1/3 \end{pmatrix} - 0}{\sqrt{\frac{86\frac{2}{3}}{20-2} \cdot (1 \ 0) \begin{pmatrix} 1/20 & 0 \\ 0 & 1/75 \end{pmatrix} \begin{pmatrix} 1 \\ 0 \end{pmatrix}}} = 1.02$$

$$t_{20-2, 0.025} = \pm 2.101$$

... Ho פירוש 10 0.05 מ"ג

$$5. \quad H_0: (0 \ 1) \begin{pmatrix} \beta_1 \\ \beta_2 \end{pmatrix} = 1$$

$$t = \frac{(0 \ 1) \begin{pmatrix} 1/2 \\ 1/3 \end{pmatrix} - 1}{\sqrt{\frac{86\frac{2}{3}}{20-2} \cdot (0 \ 1) \begin{pmatrix} 1/20 & 0 \\ 0 & 1/75 \end{pmatrix} \begin{pmatrix} 0 \\ 1 \end{pmatrix}}} = -2.63$$

... Ho פירוש 0.05 מ"ג

$$6. \quad H_0: \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \end{pmatrix} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$F = \frac{\begin{pmatrix} 1/2-0 & 1/3-1 \end{pmatrix} \left[\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 20 & 0 \\ 0 & 75 \end{pmatrix}^{-1} \begin{pmatrix} 1/2-0 \\ 1/3-1 \end{pmatrix} \right] / 2}{86\frac{2}{3} / (20-2)} = 3.98 > F_{2,18,0.05} = 3.55$$

... Ho פירוש 0.05 מ"ג