重回帰分析ノート (3)

$r_{1y} = r_{2y}$ のときの r_{1y}, r_{2y} と b_1, R との関係

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$$R^2 = \frac{r_{1y}^2 + r_{2y}^2 - 2 r_{12} r_{1y} r_{2y}}{1 - r_{12}^2}$$

$$= \frac{2 r_{1y}^2}{1 + r_{12}} \quad (r_{1y} = r_{2y}) \qquad r_{12} = \frac{2 r_{1y}^2}{R^2} - 1$$

$$b_1 = \frac{r_{1y} - r_{12} r_{2y}}{1 - r_{12}^2}$$

$$= \frac{r_{1y}}{1 + r_{12}} \quad (r_{1y} = r_{2y}) \qquad r_{12} = \frac{r_{1y}}{b} - 1$$

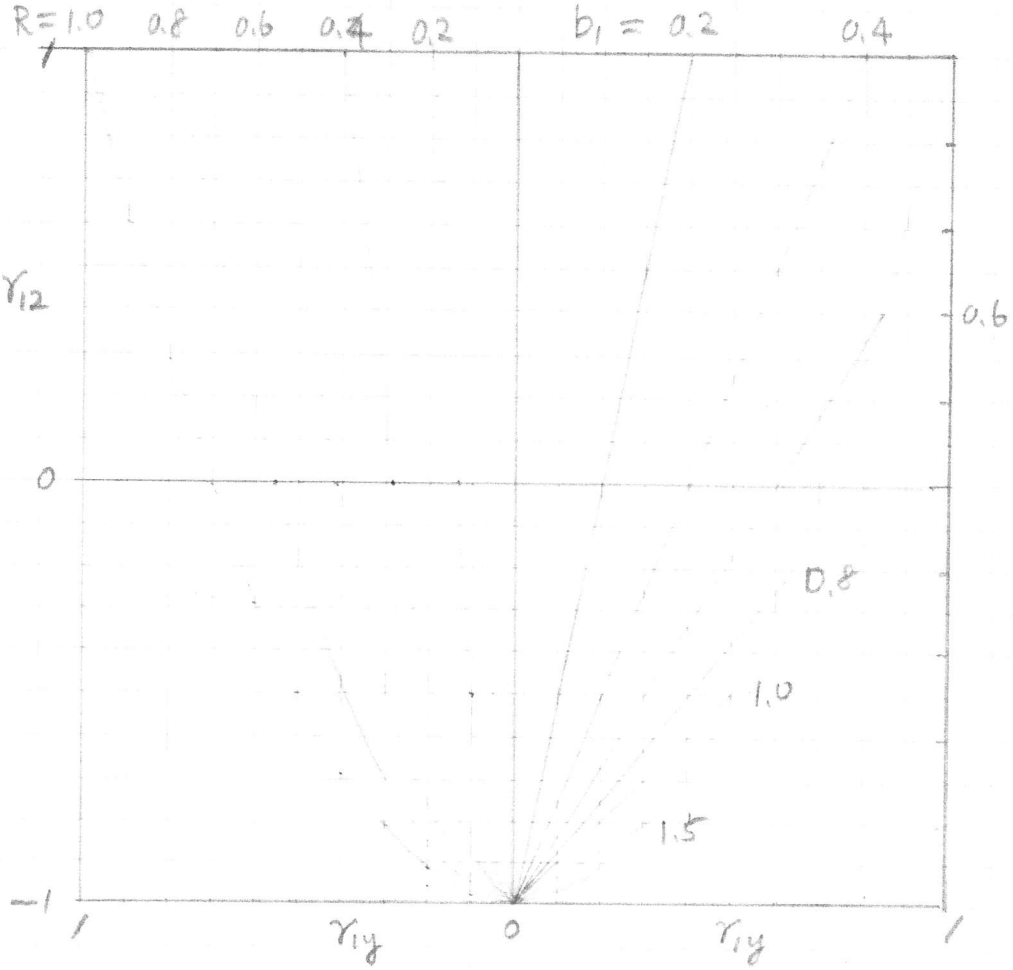
$$D(b_1) = \sqrt{\frac{1}{n(1 - r_{12}^2)} \cdot \frac{1 - R^2}{n - 2}}$$

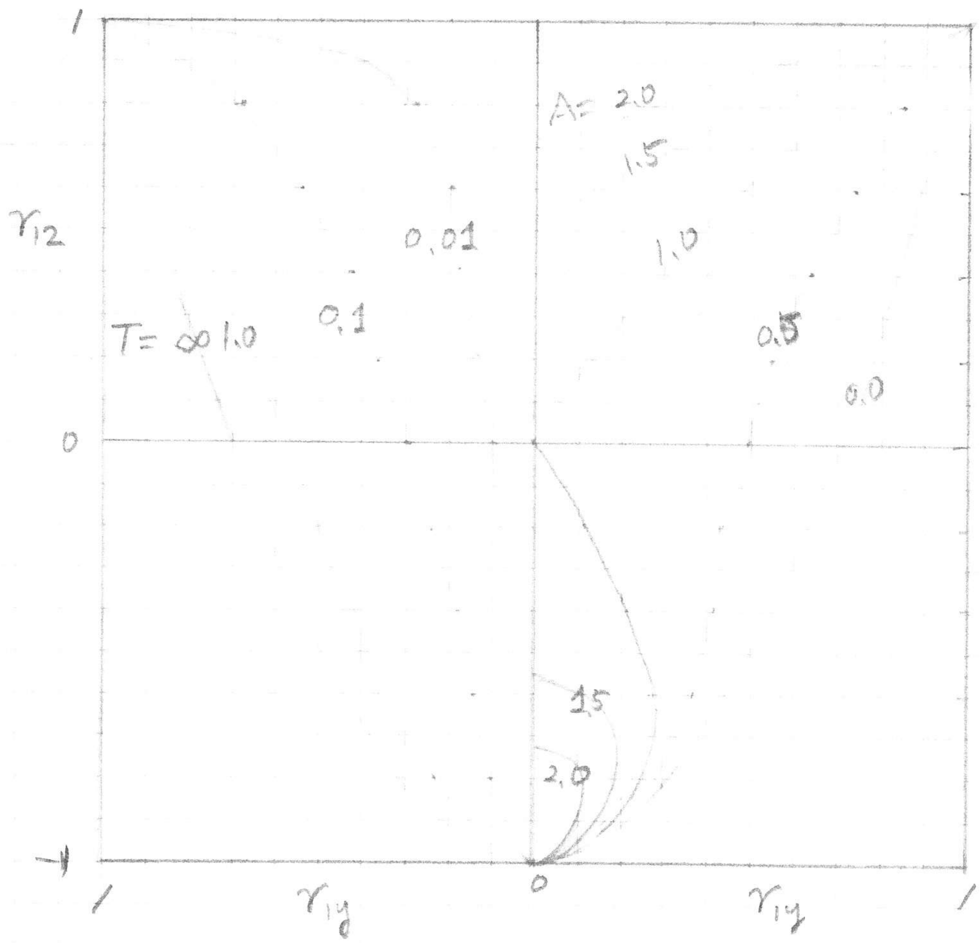
$$= \sqrt{\frac{1 + r_{12} - 2 r_{1y}^2}{n(n-2)(1 - r_{12}^2)(1 + r_{12})}} \qquad r_{1y}^2 = \frac{1 + r_{12}}{2}\left[1 - (1 - r_{12}^2) A\right]$$

$$A \equiv n(n-2) D^2(b_1)$$

$$t = \frac{b_1}{D(b_1)} = r_{1y} \sqrt{\frac{n(n-2)(1 - r_{12})}{1 + r_{12} - 2 r_{1y}^2}} \qquad r_{1y}^2 = \frac{(1 + r_{12}) T}{1 - r_{12} + 2T}$$

$$T \equiv t^2 / n(n-2)$$


R=1.0 0.8 0.6 0.4 0.2
b1 = 0.2
0.4
0.6
0.8
1.0
1.5
r12
1
0
-1
1
r1y
0
r1y
1


1
A= 2.0
1.5
1.0
0.5
0.0
r12
0.01
0.1
T= ∞ 1.0
0
1.5
2.0
-1
1
r1y
0
r1y
1