INTERVALLI PREVISIVI

$$y^* = \beta_0 + \beta_1 X^* + \varepsilon^* = \mu^* + \varepsilon^*$$

$$E(y^*) = \mu^* = \beta_0 + \beta_1 X^*$$ valore atteso

$$\hat{y}^* = b_0 + b_1 X^*$$ valore interpolato

$$E(\hat{y}^*) = \beta_0 + \beta_1 X^* = \mu^* = E(y^*)$$

$$E(\hat{y}^*) = \mu^* \Rightarrow \hat{y}^*$$ stimatore corretto di μ^*

$$E(\hat{y}^*) = E(y^*)$$ $\hat{y}^*$ previsore di y^*

$$\hat{y}^* - y$$ errore di previsione

$$E(\hat{y}^* - y) = 0$$ previ

VARIANZA ERRORE PREVISIONE

$$y^* - \hat{y}^* = \mu^* - \hat{y}^* + \varepsilon^*$$

$$E(y^* - \hat{y}^*)^2 = E(\mu^* - \hat{y}^*)^2 + E(\varepsilon^{*2}) + 2E\left[(\mu^* - \hat{y}^*) \times \varepsilon^*\right] =$$

$$= Var(\hat{y}^*) + \sigma^2 + 2Cov(\mu^* - \hat{y}, \varepsilon^*) =$$

$$= Var(\hat{y}^*) + \sigma^2 =$$

$$= \sigma^2\left(1 + \frac{1}{n} + \frac{(x^* - \mu_x)^2}{n\,Var(X)}\right)$$

$$= \sigma^2_{y^* - \hat{y}}$$

$$\hat{\sigma}^2_{y^* - \hat{y}} = \tilde{s}^2\left(1 + \frac{1}{n} + \frac{(x^* - \mu_x)^2}{n\,Var(X)}\right)$$

INTERVALLI PREVISIVI per

$$y^* = \beta_0 + \beta_1 x^* + \varepsilon^*$$

$$\hat{y}^* - t_{1-\alpha/2,\, n-2}\, \hat{\sigma}_{y^*-\hat{y}^*} \leq y^* \leq \hat{y}^* + t_{1-\alpha/2,\, n-2}\, \hat{\sigma}_{y^*-\hat{y}^*}$$

$$\hat{y}^* = b_0 + b_1 x^*$$

$$\hat{\sigma}^2_{y^*-\hat{y}^*} = \tilde{s}^2 \left(1 + \frac{1}{n} + \frac{(x^* - \mu_x)^2}{n\, Var(X)} \right)$$