

# ECONOMIA APPLICATA P - LABORATORIO 1

FUNZIONE DI COSTO COBB-DOUGLAS (FCCD) 3/12/19

FILE DATI : DATI\_LAB1A.DTA

VARIABILI : C = COSTS

Y = KWH (OUTPUT)

PL = PREZZO INPUT LAVORO

P2 = PRICE INPUT CAPITAL

P3 = PRICE INPUT CARBON

T = 145

$$M_U : \log C_t = \beta_0 + \beta_y \log Y_t + \beta_1 \log P1_t + \beta_2 \log P2_t + \beta_3 \log P3_t + \beta_4 \log U_t$$

$$\text{DOVE} \quad \beta_y = 1/n \quad ; \quad n \equiv \alpha_1 + \alpha_2 + \alpha_3$$

$$\beta_1 = \alpha_1/n \quad ; \quad \beta_2 = \alpha_2/n \quad ; \quad \beta_3 = \alpha_3/n$$

$$t = 1 \dots T$$

DATO CHE LA FCCD È OMOGENEA LINEARE  
NEI PREZZI DEGLI INPUT, IL MODELLO DI INTERESSE  
È QUELLO CHE IMPONE LA RESTRIZIONE  $\beta_1 + \beta_2 + \beta_3 = 1$ :

$$V_{Rt} : \log \frac{C_t}{P_{3t}} = \beta_0 + \beta_1 \log Y_t + \beta_2 \log \frac{P_{1t}}{P_{3t}} + \beta_3 \log \frac{P_{2t}}{P_{3t}} + U_t$$

$$\text{DA NOTANS CHE: } \beta_y = \frac{1}{2} \Rightarrow \hat{v} = 1 / \hat{\beta}_y$$

$$\beta_1 = \frac{\alpha_1}{2} \Rightarrow \hat{\alpha}_1 = \hat{v} \cdot \hat{\beta}_1$$

$$\beta_2 = \frac{\alpha_2}{2} \Rightarrow \hat{\alpha}_2 = \hat{v} \cdot \hat{\beta}_2$$

$$\alpha_1 + \alpha_2 + \alpha_3 = 1 \Rightarrow \hat{\alpha}_3 = \hat{v} - \hat{\alpha}_1 - \hat{\alpha}_2$$

$$(\beta_1 + \beta_2 + \beta_3 = 1)$$

$$(\hat{\beta}_3 = 1 - \hat{\beta}_1 - \hat{\beta}_2)$$

$$(\hat{\alpha}_3 = \hat{v} \cdot \hat{\beta}_3)$$

CONAUDI STATA :

USE DAT1\_LAB1A.DTA

DESC

LIST

GEN C = log(costs/P3)

GEN y = log(KV/H)

$$\text{GEN } X_1 = \log(P_1/P_3)$$

$$\text{GEN } X_2 = \log(P_2/P_3)$$

$$\text{REG } C \quad y \quad X_1 \quad X_2$$

EST STO MOD

$$\text{SALAN } R = 1 / -B[y]$$

$$\text{SALAN ALFA} = R * -B[X_1]$$

$$\text{SCALAR ALFA2} = R * B[X2]$$

$$\text{SCALAR ALFA3} = R - \text{ALFA1} - \text{ALFA2}$$

$$\text{SCALAR BETA3} = 1 - B[X1] - B[X2]$$

$$\text{SCALAR ALFA3\_BIS} = R * \text{BETA3}$$

$$\text{SCALAR LIST ALFA1 ALFA2 ALFA3 ALFA3\_BIS}$$

## TEST DELL'IPOTESI DI RENDIMENTO DI SVILTA COSTANTI

$$H_0: \pi = 1 \quad \text{vs} \quad H_1: \pi \neq 1$$

$$\text{TEST } y = 1$$

$$\text{TEST ML } 1/1 - B[y] = 1$$

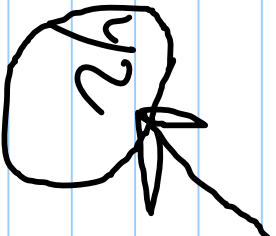


# ANALISI DEI RESIDUI

PREDICT WHAT, RESIDUALS

HOWMAY (SCATTER WHAT  $y$ ) (QFIT WHAT  $y$ )

GEN  $y_2 = y^{12}$

NEG C  $y$   $x_1$   $x_2$  

EST STO MOD

CONFRONTO TRA I DUE MODELLI (LINEARE E QUADRATICO)  
N<sub>1</sub> y

ESTIMATES TABLE MODEL 0001 ✓

ESTIMATES TABLE MODEL 0002, SIGNIF (R2-A RINSE)

STAR (.1 .05 .01)

STYLE (ONELINE)

## ANALISI SUI RENDIMENTI DI SCALA

Il modello di regressione in  $y$ :

$$\log C/P_{3t} = \beta_0 + \beta_1 \log Y_t + \beta_2 \log P_{2t}/P_{3t} + \beta_2 \log P_{2t}/P_{3t} + \beta_3 \log Y_t^2 + U_t$$

CONSENTE DI DEFINIRE:  $\frac{\partial \log(C/P_{3t})}{\partial \log Y_t} = \beta_1 + 2\beta_3 \log Y_t$

DA CUI: 
$$Y_t = \frac{1}{\beta_1 + 2\beta_3 \log Y_t} \left( \frac{\text{RENDIMENTI DI SCALA}}{\text{VARIABILI ASPETTATE}} \right)$$

$$GEN RT = 1 / ( -B[y] + 2 * -B[y_2] * y )$$

TIKOVAY (LINE RT y, SORT)

TESTI ALTERNATIVI DEI PARAMETRI DI RENDIMENTO DI

SCALTA COSTANTI

• TESTI (  $y=1$  ) (  $y_2=0$  )

# CURVA DI APPRENDIMENTO

$$\log C_t = \beta_0 + \beta_1 \log M_t + (\beta_2) \log Y_t + U_t \quad (AR-U)$$

$\beta_1$  ←  $\beta_2$

costi materiali      output  
curva      consumo

output consumo

$$\log C_t = \beta_0 + \beta_1 \log M_t + U_t \quad (AR-R) \leftarrow$$

# REGRESSION ANALISIS

$$Y_t = \beta_0 + \beta_1 X_t + \epsilon_t$$

