

BOX-COX LINEARITY PLOT**PURPOSE**

Generates a Box-Cox linearity plot.

DESCRIPTION

A Box-Cox linearity plot is a graphical technique for determining the Box-Cox transformation that yields the maximum correlation between two variables. The Box-Cox transformation family is essentially the power-transformation family (adjusted to include log transformations). The form for the family is:

$$T(y) = \frac{y^\lambda - 1}{\lambda} \quad (\text{EQ 2-2})$$

The horizontal axis is the lambda parameter. The vertical axis is the computed correlation coefficient between <y1> and the transformed <y2>. The lambda corresponding to the highest correlation is the appropriate transformation to use in linearizing the relationship between <y1> and <y2>.

SYNTAX

BOX-COX LINEARITY PLOT <y1> <y2> <SUBSET/EXCEPT/FOR qualification>
 where <y1> is the first response variable;
 <y2> is the second response variable;
 and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

BOX-COX LINEARITY PLOT Y1 Y2

NOTE

The number of observations in the 2 response variables must be equal.

DEFAULT

None

SYNONYMS

BOX COX LINEARITY PLOT

RELATED COMMANDS

LINES	=	Sets the types for plot lines.
CHARACTERS	=	Sets the types for plot characters.
BOX-COX NORMALITY PLOT	=	Generates a Box-Cox normality plot.
BOX-COX HOMOSCED PLOT	=	Generates a Box-Cox homoscedasticity plot.
PLOT	=	Generates a data or function plot.

APPLICATION

Exploratory Data Analysis

IMPLEMENTATION DATE

87/5

PROGRAM

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SKIP 25
READ BERGER1.DAT Y X
.
MULTIPLY 2 2; MULTIPLY CORNER COORDINATES 0 0 100 100
FIT Y X
LINE SOLID BLANK
CHARACTER BLANK X
TITLE LINEAR FIT OF RAW DATA
PLOT PRED Y VS X
.
TITLE BOX-COX LINEARITY PLOT
X1LABEL LAMBDA
Y1LABEL CORRELATION COEFFICIENT
BOX-COX LINEARITY PLOT Y X
.
LET LAMBDA = 0.5
LET Y2 = (Y**LAMBDA - 1)/LAMBDA
FIT Y2 X
TITLE LINEAR FIT OF TRANSFORMED DATA
X1LABEL
Y1LABEL
PLOT PRED Y2 VS X
END OF MULTIPLY
    
```

