EV2PPF

PURPOSE
      Compute the standard form of the extreme value type II (also known as the Frechet) percent point function.

DESCRIPTION
      For the minimum order statistic, the standard form of the extreme value type II percent point function is:

$$G(p) = -\left(\log\left(\frac{1}{1-p}\right)\right)^{\left(\frac{-1}{\gamma}\right)}$$

                                                                                                                          (EQ 8-189)

      For the maximum order statistic, the standard form of the extreme value type II percent point function is:

$$G(p) = \left(\log\left(\frac{1}{p}\right)\right)^{\left(\frac{-1}{\gamma}\right)}$$

                                                                                                                          (EQ 8-190)

      where γ is a positive number that is the shape parameter. The input value is a real number between 0 and 1.

SYNTAX
      LET <y2> = EV2PPF(<y1>)   <SUBSET/EXCEPT/FOR qualification>
      where <y1> is a variable, a number, or a parameter in the range 0 to 1;
            <y2> is a variable or a parameter (depending on what <y1> is) where the computed extreme value type II ppf value is stored;
            <gamma> is a number or parameter that specifies the shape parameter;
      and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES
      LET A = EV2PPF(0.9)
      LET Y = EV2PPF(P)

NOTE 1
      The SET MINMAX command specifies whether the minimum or the maximum order statistic form is used. Entering SET MINMAX 2
      specifies the maximum order statistic while SET MINMAX 1 specifies the minimum order statistic.

NOTE 2
      For the minimum order statistic, the general form of the extreme value type II percent point function is:

$$G(p) = \mu - \beta\left(\log\left(\frac{1}{1-p}\right)\right)^{\left(\frac{-1}{\gamma}\right)}$$

                                                                                                                          (EQ 8-191)

      For the maximum order statistic, the general form of the extreme value type II percent point function is:

$$G(p) = \mu + \beta\left(\log\left(\frac{1}{p}\right)\right)^{\left(\frac{-1}{\gamma}\right)}$$

                                                                                                                          (EQ 8-192)

      The parameter μ is a location parameter and the parameter β is a scale parameter. See topic (3) under the General considerations section
      at the beginning of this chapter for a discussion of generating ppf values for the general form of the distribution.

DEFAULT
      None

SYNONYMS
      None

RELATED COMMANDS
      EV2CDF   =   Compute the extreme value type II cumulative distribution function.
      EV2PDF   =   Compute the extreme value type II probability density function.
      EV1PDF   =   Compute the extreme value type I probability density function.
      EV1PPF   =   Compute the extreme value type I percent point function.

EV2PPF	=	Compute the extreme value type II percent point function.
WEIPDF	=	Compute the Weibull probability density function.
WEIPPF	=	Compute the Weibull percent point function.

REFERENCE

"Methods for Statistical Analysis of Reliability and Life Data," Mann, Schaffer, and Singpurwalla, Wiley, 1974 (pp. 102-111).

APPLICATIONS

Extreme Value Analysis

IMPLEMENTATION DATE

94/4

PROGRAM

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XLIMITS 0 1; XTIC DECIMAL 1
MAJOR XTIC NUMBER 6; MINOR XTIC NUMBER 1
SEGMENT 1 COORDINATES 16 88 21 88; SEGMENT 1 PATTERN SOLID
SEGMENT 2 COORDINATES 16 84 21 84; SEGMENT 2 PATTERN DASH
SEGMENT 3 COORDINATES 16 80 21 80; SEGMENT 3 PATTERN DOT
SEGMENT 4 COORDINATES 16 76 21 76; SEGMENT 4 PATTERN DA2
LEGEND 1 GAMMA = 1; LEGEND 1 COORDINATES 22 87
LEGEND 2 GAMMA = 0.5; LEGEND 2 COORDINATES 22 83
LEGEND 3 GAMMA = 2; LEGEND 3 COORDINATES 22 79
LEGEND 4 GAMMA = 5; LEGEND 4 COORDINATES 22 75
LINES SOLID DASH DOT DASH2; SET MINMAX 2
TITLE EV2PPF FOR VARIOUS VALUES OF GAMMA
X1LABEL X; Y1LABEL PROBABILITY
PLOT EV2PPF(X,1) FOR X = 0.01 .01 0.95 AND
PLOT EV2PPF(X,0.5) FOR X = 0.01 .01 0.75 AND
PLOT EV2PPF(X,2) FOR X = 0.01 .01 0.99 AND
PLOT EV2PPF(X,5) FOR X = 0.01 .01 0.99
```