Package 'skewt'

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Title The Skewed Student-t Distribution

Description Density, distribution function, quantile function and random generation for the skewed t distribution of Fernandez and Steel.

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NeedsCompilation no

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R topics documented:

`SkTDist` *The Skewed Student t Distribution*

Description

Density, distribution function, quantile function and random generation for the skewed t distribution, as introduced by Fernandez and Steel, with `df` degrees of freedom.

Usage

```
dskt(x, df, gamma = 1)
pskt(x, df, gamma = 1)
qskt(p, df, gamma)
rskt(n, df, gamma)
```

Arguments

x	vector of quantiles.
p	vector of probabilities.
n	number of observations. If length(n) > 1, the length is taken to be the number required.
df	degrees of freedom (> 0, maybe non-integer).
gamma	skewing parameter, γ

Details

The Skewed t distribution with df $= \nu$ degrees of freedom has the following density, where $f(x)$ is the density of the t distribution, with $= \nu$ degrees of freedom :

$$f(x) = \frac{2}{\gamma + \frac{1}{\gamma}} f(\gamma x) \quad for \quad x < 0$$

and

$$f(x) = \frac{2}{\gamma + \frac{1}{\gamma}} f(\frac{x}{\gamma}) \quad for \quad x \geq 0$$

Value

dskt gives the density, pskt gives the distribution function, qskt gives the quantile function, and rskt generates random deviates.

References

Fernandez, C. and Steel, M. F. J. (1998). On Bayesian modeling of fat tails and skewness, *J. Am. Statist. Assoc.* **93**, 359–371.

Rohr, P. and Hoeschele, I. (2002). Bayesian QTL mapping using skewed Student-t distributions, *Genet. Sel. Evol.* **34**, 1–21.

See Also

df for the F distribution.

Examples

```
dskt(0.5,2)
dskt(0.01,2,2)
pskt(1.25,2,2)
pskt(c(0.5,1.25),3)
qskt(c(0,0.025,0.25,0.5,0.75,0.975,1),2,2)
rskt(100,2,2)
plot(function(x)dskt(x,2,2),-3,3,n=301)
```

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