Package ‘MEtest’

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Type Package

Title A Homogeneity Test under the Presence of Measurement Errors

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Depends R (>= 3.2)

Imports statmod

Description Provides a function me.test() to test equality of distributions when observations are subject to measurement errors.

License GPL-3

NeedsCompilation yes

Repository CRAN

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me.test A homogeneity Test under the Presence of Measurement Error

Description

This function provides the test statistic and p-value of a homogeneity test of distributions when the observations are measured with error.
me.test

Usage

me.test(W, V, B = 1000, wt = c("Uniform", "Normal"), wt.bd = NULL,
wt.prob = 0.99, nGL = 32)

Arguments

W an \( m_x \) (\( \geq 2 \)) by \( n_x \) matrix of observations.
V an \( m_y \) (\( \geq 2 \)) by \( n_y \) matrix of observations.
B the number of bootstrap samples. Default is 1000.
wt type of the weight function. Uniform and standard normal distributions are
available.
wt.bd lower and upper bound of the weight function. If \( wt.bd \) is not specified, bounds
are computed based on the deconvoluted distribution function.
wt.prob probability used to compute lower and upper bound. Will be ignored if \( wt.bd \) is
provided.
nGL the number of nodes for Gaussian quadrature

Details

Based on our extensive simulations, we recommend to use uniform weight function with 0.99
probability.

Value

The output is an object of the class \texttt{htest} like in \texttt{t.test}.

\begin{itemize}
  \item \texttt{statistic} the value of the test statistic.
  \item \texttt{p.value} the p-value for the test.
  \item \texttt{method} the character string indicating the weight function.
  \item \texttt{alternative} a character string describing the alternative hypothesis.
  \item \texttt{boundary} lower and upper bound for the weight function.
\end{itemize}

Author(s)

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References

Lee, D., Lahiri, S. N. and Sinha, S. A Test of Homogeneity of Distributions when Observations are
Subject to Measurement Errors. \textit{Submitted}. 
Examples

```
library(statmod)
set.seed(1234)
n <- 200
mx <- my <- 2
X <- rnorm(n, mean = 0, sd = 1)
Y <- rnorm(n, mean = 0.2, sd = 1)
Ux <- matrix(rnorm(n*mx, mean = 0, sd = 0.5), ncol = mx)
Uy <- matrix(rnorm(n*my, mean = 0, sd = 0.5), ncol = my)

W <- X + Ux
V <- Y + Uy
me.test(W, V, wt = "Uniform")
```
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