Package ‘MEtest’

August 19, 2019

Type Package
Title A Homogeneity Test under the Presence of Measurement Errors
Version 1.1
Date 2019-08-15
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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
Date/Publication 2019-08-19 17:40:12 UTC

R topics documented:

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Description

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

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

Arguments

- **W**: an \(m_x \times n\) matrix of observations.
- **V**: an \(m_y \times n\) 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 `htest` like in `t.test`.

- `statistic`: the value of the test statistic.
- `p.value`: the p-value for the test.
- `method`: the character string indicating the weight function.
- `alternative`: a character string describing the alternative hypothesis.
- `boundary`: lower and upper bound for the weight function.

Author(s)

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References

Lee, D., Lahiri, S. N. and Sinha, S. A Test of Homegeneity of Distributions when Observations are Subject to Measurement Errors. Submitted.
Examples

```r
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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