Package 'CVcalibration'

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Type Package

Title Estimation of the Calibration Equation with Error-in Observations

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Author He Qi and Lu Tian

Maintainer Lu Tian <lutian@stanford.edu>

Description Statistical inferences for estimating the calibration equation with error-in observations

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LazyLoad yes

NeedsCompilation no

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R topics documented:

`calfun` *Estimating the Calibration Equation*

Description

Estimating the calibration equation "y=a+b*x" with error-in observations assuming that the coefficients of the variation of the measurements are constants.

Usage

```
calfun(x, y, CVx, CVy, lambda0)
```

Arguments

x	The observed x values
y	The observed y values
CVx	The underlying coefficient of variation of measurement x
CVy	The underlying coefficient of variation of measurement y
lambda0	The ratio, CV_y^2/CV_x^2

Value

result	The estimated regression coefficients, standard error and confidence intervals based on (1) CVx only; (2) CVy only; (3) both CVx and CVy; and (4) the ratio of CVy^2/CVx^2.

Author(s)

Lu Tian, He Qi

Examples

```
n=100
sigma0=10

beta0=5
beta1=1.2
CVx=0.15
CVy=0.07

lambda0=CVy^2/CVx^2

x0=runif(n, 20, 200)
y0=beta0+beta1*x0+rnorm(n)*sigma0
x=x0+x0*CVx*rnorm(n)
y=y0+y0*CVy*rnorm(n)

fit=calfun(x, y, CVx, CVy, lambda0)
fit
```

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samplesize *Sample Size Estimation For Calibration Study*

Description

Compute the sample size needed for a calibration study assuming that the coefficients of the variation of measurements are constants.

Usage

```
samplesize(x0, d0, x=seq(20, 200, length=1000), CVx, CVy)
```

Arguments

x0	The x-value you plan to calibrate with the estimated calibration equation
d0	The required length of the 95% confidence interval of the calibrated x-value based on the estimated calibration equation. The narrow confidence interval require a large sample size.
x	The empirical observations of the target distribution from which x-values will be drawn in the planned study.
CVx	The underlying coefficient of variation of measurement x
CVy	The underlying coefficient of variation of measurement y

Value

size	The sample size needed for estimating the calibration equation based on (1) CVx only; (2) CVy only; (3) both CVx and CVy; and (4) the ratio of CVy^2/CVx^2.

Author(s)

Lu Tian, He Qi

Examples

```
samplesize(40, 10, x=seq(10, 200, length=1000), CVx=0.1, CVy=0.05)
```

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