Package 'xtrec'

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Type Package

Title Panel Unit Root Test Based on Recursive Detrending

Version 1.0.0

Description Implements the recursively detrended panel unit root tests proposed by Westerlund (2015) <doi:10.1016/j.jeconom.2014.09.013>. Two variants are provided: the basic t-REC test assuming iid errors, and the robust t-RREC test that accounts for serial correlation, cross-sectional dependence, and heteroskedasticity via defactoring and BIC-selected lag augmentation. Both tests have a standard normal null distribution requiring no mean or variance correction. The panel must be strongly balanced.

License GPL-3

Encoding UTF-8

RoxygenNote 7.3.2

Depends R (>= 3.5.0)

Imports stats

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

URL https://github.com/muhammedalkhalaf/xtrec

BugReports https://github.com/muhammedalkhalaf/xtrec/issues

NeedsCompilation no

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Repository CRAN

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Contents

`grunfeld_data` *Grunfeld Investment Data*

Description

A balanced panel dataset for 5 large US corporations over 20 years (1935-1954).

Usage

```
grunfeld_data()
```

Value

A data frame with columns: `firm`, `year`, `invest`, `mvalue`.

References

Grunfeld, Y. (1958). *The Determinants of Corporate Investment*. PhD thesis, University of Chicago.

Examples

```
dat <- grunfeld_data()
head(dat)
```

`print.xtrec` *Print Method for xtrec Objects*

Description

Prints a formatted summary of an "`xtrec`" test result.

Usage

```
## S3 method for class 'xtrec'
print(x, ...)
```

Arguments

x	An object of class "xtrec".
...	Additional arguments (ignored).

Value

Invisibly returns x.

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summary.xtrec *Summary Method for xtrec Objects*

Description

Prints a summary of an "xtrec" test result.

Usage

```
## S3 method for class 'xtrec'
summary(object, ...)
```

Arguments

object	An object of class "xtrec".
...	Additional arguments (ignored).

Value

Invisibly returns object.

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xtrec *Panel Unit Root Test Based on Recursive Detrending*

Description

Implements the t-REC and t-RREC panel unit root tests of Westerlund (2015). The t-REC assumes iid errors; the robust t-RREC accounts for serial correlation, cross-sectional dependence, and heteroskedasticity.

Usage

```
xtrec(data, var, panel_id, time_id, trend = 0L,
      robust = FALSE, maxlag = -1L)
```

Arguments

`data`	A data frame in long format.
`var`	Character. Name of the variable to test.
`panel_id`	Character. Name of the panel identifier variable.
`time_id`	Character. Name of the time variable.
`trend`	Integer. Polynomial trend degree: `0` (constant only), `1` (linear trend), or `2` (quadratic trend).
`robust`	Logical. If `TRUE`, compute the robust t-RREC test.
`maxlag`	Integer. Maximum lag for BIC selection (-1 for automatic).

Value

An object of class `"xtrec"` containing the test statistic, p-value, and panel summary statistics.

References

Westerlund, J. (2015). The effect of recursive detrending on panel unit root tests. *Journal of Econometrics*, 185(2), 453-467. doi:10.1016/j.jeconom.2014.09.013

Examples

```
dat <- grunfeld_data()
res <- xtrec(dat, var = "invest", panel_id = "firm",
             time_id = "year", trend = 0L, robust = FALSE)
print(res)
```

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