

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](https://doi.org/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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Contents

grunfeld_data	2
print.xtrec	2
summary.xtrec	3
xtrec	3

Index	5
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grunfeld_data	<i>Grunfeld Investment Data</i>
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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	<i>Print Method for xtrec Objects</i>
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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.

summary.xtrec	<i>Summary Method for xtrec Objects</i>
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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.

xtrec	<i>Panel Unit Root Test Based on Recursive Detrending</i>
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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

<code>data</code>	A data frame in long format.
<code>var</code>	Character. Name of the variable to test.
<code>panel_id</code>	Character. Name of the panel identifier variable.
<code>time_id</code>	Character. Name of the time variable.
<code>trend</code>	Integer. Polynomial trend degree: 0 (constant only), 1 (linear trend), or 2 (quadratic trend).
<code>robust</code>	Logical. If TRUE, compute the robust t-RREC test.
<code>maxlag</code>	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](https://doi.org/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)
```

Index

- * **datasets**
 - grunfeld_data, 2
- * **htest**
 - xtrec, 3
- * **print**
 - print.xtrec, 2
 - summary.xtrec, 3

grunfeld_data, 2

print.xtrec, 2

summary.xtrec, 3

xtrec, 3