Package 'combcoint'

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Title A Joint Test-Statistic for the Null of Non-Cointegration

Version 0.2.0

Description Implements a joint cointegration testing approach that combines Engle-Granger, Johansen maximum eigenvalue, Boswijk, and Banerjee tests into a unified test-statistic for the null of non-cointegration. Also see Bayer and Hanck (2013) <doi:10.1111/j.1467-9892.2012.00814.x>.

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BugReports https://github.com/Janine-Langerbein/combcoint/issues

Depends R (>= 3.6.0)

Imports dplyr, Hmisc, magrittr, purrr, stats, stringr, tibble, tidyr, tsDyn, urca

Suggests MTS, knitr, rmarkdown, testthat (>= 3.0.0)

VignetteBuilder knitr

Config/testthat/edition 3

Encoding UTF-8

LazyData true

RoxygenNote 7.3.2

URL https://github.com/Janine-Langerbein/combcoint

NeedsCompilation no

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`banerjee` *Cointegration Tests*

Description

Executes common cointegration tests, which serve as underlying tests for the Bayer Hanck Test statistic.

Usage

```
banerjee(formula, data, lags = 1, trend = "const")

boswijk(formula, data, lags = 1, trend = "const")

englegranger(formula, data, lags = 1, trend = "const")

johansen(formula, data, type = "eigen", lags = 1, trend = "const")
```

Arguments

`formula`	An object of class `formula` to describe the model.
`data`	An optional data frame containing the variables in the model.
`lags`	Number of lags to be included.
`trend`	Type of deterministic component to be inlcuded, "none" for no deterministics, "const" for a constant and "trend" for a constant plus trend.
`type`	Test to be conducted, either "eigen" or "trace".

Value

Returns an object of class `"list"`.

Functions

- `banerjee()`: Executes Banerjee Test.
- `boswijk()`: Executes Boswijk Test.
- `johansen()`: Executes Johansen Test.

References

Engle, R. and Granger, C. (1987), Co-integration and Error Correction: Representation, Estimation, and Testing, Econometrica 55(2), 251-76.

Johansen, S. (1988), Statistical analysis of cointegration vectors, Journal of Economic Dynamics and Control 12(2-3), 231-254.

Banerjee, A., Dolado, J. J. and Mestre, R. (1998), Error-correction Mechanism Tests for Cointegration in a Single-equation Framework, Journal of Times Series Analysis 19(3), 267-283.

Boswijk, H. P. (1994), Testing for an unstable root in conditional and structural error correction models, Journal of Econometrics 63(1), 37-60.

Examples

```
# Luetkepohl (2007): Economic data from West Germany
data(lutkepohl_e1)
englegranger(linvestment ~ lincome + lconsumption, data = lutkepohl_e1)

#' @examplesIf requireNamespace("MTS", quietly = TRUE)
# World Almanac and Book of Facts (1975): Monthly simple returns of the stocks of IBM,
# Coca Cola and S&P Composite index
try({
  data("mts-examples", package = "MTS")
  englegranger(sp ~ ibm + ko, data = ibmspko)
}, silent = TRUE)
```

---

bayerhanck *Joint Test-Statistic for the Null of Non-Cointegration*

Description

Produces a joint test-statistic for the null of non-cointegration, aggregating various cointegration tests.

Usage

```
bayerhanck(formula, data, lags = 1, trend = "const", test = "all")
```

Arguments

formula	An object of class formula to describe the model.
data	An optional data frame containing the variables in the model.
lags	Number of lags to be included.
trend	Type of deterministic component to be included. "none" for no deterministic, "const" for a constant and "trend" for a constant plus trend.
test	Selection of tests to choose from. Choices are either "ej", for englegranger and johansen, or "all", for englegranger, johansen, banerjee and boswijk.

Value

bayerhanck returns an object of classes "bhtest" and "list".

The function summary is used to print a summary, which includes the test statistics and p-values for the underlying tests, as well as the test statistic and p-value for the Bayer Hanck Test.

An object of class "bhtest" is a "list" containing, inter alia, the components:

bh.test	the test statistic of the Bayer Hanck Test.
bh.pval	the p-Value of the Bayer Hanck Test.
test.stat	the test statistics of the underlying tests.
pval.stat	the p-values of the underlying tests.

References

Bayer, C. and Hanck, C. (2013). Combining non-cointegration tests. *Journal of Time Series Analysis*, 34(1), 83 – 95. doi:10.1111/j.14679892.2012.00814.x

Examples

```
# Luetkepohl (2007): Economic data from West Germany
data(lutkepohl_e1)
bayerhanck(linvestment ~ lincome + lconsumption, data = lutkepohl_e1)
bayerhanck(linvestment ~ lincome + lconsumption, data = lutkepohl_e1, lags = 4)



# World Almanac and Book of Facts (1975): Monthly simple returns of the stocks of IBM,
# Coca Cola and S&P Composite index
try({
  data("mts-examples", package = "MTS")
  bayerhanck(sp ~ ibm + ko, data = ibmspko)
}, silent = TRUE)
```

---

lutkepohl_e1 *Economic data from West Germany*

Description

The data was retrieved from the E1 file of Luetkepohl (2007) and contains quarterly, seasonally adjusted data for fixed investment, disposable income, and consumption expenditures in billions of DM (Deutsche Mark, West German currency before the Euro) from the first quarter of 1960 until the fourth quarter of 1982 for West Germany. The raw data is available at http://www.jmulti.de/download/datasets/e1.dat.

Usage

```
data(lutkepohl_e1)
```

Format

A data frame with 92 rows and 10 variables:

investment fixed investment.

income disposable income.

consumption consumption expenditures.

qtr time vector in quarterly intervals.

linvestment log of fixed investment.

dlinvestment first difference of the log of fixed investment.

lincome log of disposable income.

dlincome first difference of the log of disposable income.

lconsumption log of consumption expenditures.

dlconsumption first difference of the log of consumption expenditures.

References

Luetkepohl, (2006). *New introduction to multiple time series analysis* (2nd ed.). Berlin: Springer.

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