Package 'SupMZ'

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Type Package

Title Detecting Structural Change with Heteroskedasticity

Version 0.2.0

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Description Calculates the sup MZ value to detect the unknown structural break points under Heteroskedasticity as given in Ahmed et al. (2017) (<DOI:10.1080/03610926.2016.1235200>).

Depends R (>= 3.5.0)

Imports dplyr, magrittr

License GPL-2

URL https://github.com/myaseen208/SupMZ,
https://myaseen208.github.io/SupMZ/

Encoding UTF-8

LazyData true

RoxygenNote 7.0.2

Note Department of Mathematics and Statistics, University of Agriculture Faisalabad, Faisalabad-Pakistan.

Suggests testthat

NeedsCompilation no

Repository CRAN

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`Belgium` *Data contains Household Consumption (C) and GDP (Y) for Belgium from 1969 to 1998.*

Description

data for Household Consumption (C) and GDP (Y) for Japan for years 1969 to 1998 for japan to detect the structural breaks with Heteroskedasticity.

Usage

```
data(Belgium)
```

Format

A `data.frame` with 30 rows and 3 variables.

`Year` A tiem series from the 1969 to 1998 to find the year of structural break

`C` Household Consumption

`Y` Gross Domestic Production (GDP)

Author(s)

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3. Gulfam Haider (<haider.gulfam786@gmail.com>)

Examples

```
data(Belgium)
```

`Japan` *Data contains Household Consumption (C) and GDP (Y) for Japan from 1978 to 2007.*

Description

data for Household Consumption (C) and GDP (Y) for Japan for years 1978 to 2007 for Japan to detect the structural breaks with Heteroskedasticity.

Usage

```
data(Japan)
```

Format

A data.frame with 30 rows and 3 variables.

Year A tiem series from the 1978 to 2007 to find the year of structural break

C Household Consumption

Y Gross Domestic Production (GDP)

Author(s)

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Examples

```
data(Japan)
```

Srilanka *Data contains Household Consumption (C) and GDP (Y) for Sri Lanka from 1978 to 2006.*

Description

data for Household Consumption (C) and GDP (Y) for Japan for years 1978 to 2006 for Sri Lanka to detect the structural breaks with Heteroskedasticity.

Usage

```
data(Srilanka)
```

Format

A data.frame with 29 rows and 3 variables.

Year A tiem series from the 1978 to 2006 to find the year of structural break

C Household Consumption

Y Gross Domestic Production (GDP)

Author(s)

1. Muhammad Yaseen (<myaseen208@gmail.com>)
2. Sami Ullah (<samiullahuos@gmail.com>)
3. Gulfam Haider (<haider.gulfam786@gmail.com>)

Examples

```
data(Srilanka)
```

supmz *Detecting Structural Change with Heteroskedasticity*

Description

Calculates the sup MZ value to detect the unknown structural break points under Heteroskedasticity

Usage

```
supmz(formula, data, nBoot = 100)

## Default S3 method:
supmz(formula, data, nBoot = 100)
```

Arguments

formula	Formula for the linear model to be used. It may contain any number of independent variables.
data	Data frame containing dependent and independent variables.
nBoot	Number of bootstrap samples to compute the critical region.

Value

MZ Gives values of MZ as given by Mumtaz et.al (2017)

BreakLocation Provides the data point position where the structural break occured

SupMzValue Returns the supremum value from MZ values

SupMZ0 Returns the bootstrapped critical value for testing the significance of SupMZ

nBoot Shows the number of bootstrap samples used to compute the critical region

Author(s)

1. Muhammad Yaseen (<myaseen208@gmail.com>)
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References

Mumtaz Ahmed, Gulfam Haider & Asad Zaman (2017). Detecting structural change with heteroskedasticity. *Communications in Statistics - Theory and Methods*. **46**(21):10446-10455, DOI: 10.1080/03610926.2016.1235200

Examples

```
data(Japan)
fm1 <- supmz(formula = C~Y, data = Japan, nBoot = 10)
fm1

data(Belgium)
fm2 <- supmz(formula = C~Y, data = Belgium, nBoot = 10)
fm2

data(Srilanka)
fm3 <- supmz(formula = C~Y, data = Srilanka, nBoot = 10)
fm3
```

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