Package ‘rtip’

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**Title** Inequality, Welfare and Poverty Indices and Curves using the EU-SILC Data

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**Description** R tools to measure and compare inequality, welfare and poverty using the EU statistics on income and living conditions surveys.

**License** GPL-3

**NeedsCompilation** no

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**R topics documented:**

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At-risk-of-poverty rate

Description

Estimates the poverty rate which is defined as the share of people with an equivalised disposable income below the at-risk-of-poverty threshold.

Usage

```r
arpr(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsiz e = "HX040",
arpt.value = NULL, ci = NULL, rep = 1000, verbose = FALSE)
```

Arguments

- **dataset**: a data.frame containing the variables.
- **ipuc**: a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
- **hhcsw**: a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
- **hhsiz e**: a character string indicating the variable name of the household size. Default is "HX040".
- **arpt.value**: the at-risk-of-poverty threshold to be used (see arpt). Default is NULL which calculates arpt with default parameters.
- **ci**: a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.
- **rep**: a number to make the confidence interval using bootstrap technique.
- **verbose**: logical; if TRUE the confidence interval is plotted.
The equivalised disposable income is calculated using the standard equivalence scale (called the modified OECD scale) recommended by Eurostat. The parametric scale of Buhmann et al. (1988) can also be used. The default is the modified OECD scale (see setupDataset).

Value

The value of the at-risk-of-poverty rate.

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also

arpt, setupDataset

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
arpr(ATdataset, arpt.value = arpt(ATdataset))
Arguments

dataset a data.frame containing the variables.
ipuc a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
hhcsw a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
hhsize a character string indicating the variable name of the household size. Default is "HX040".
pz a number between 0 and 1 which represents the percentage to be used to calculate the at-risk-of-poverty threshold. The default is 0.6.
ci a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.
rep a number to do the confidence interval using bootstrap technique.
verbose logical; if TRUE the confidence interval is plotted.

Details

The equivalised disposable income is calculated using the standard equivalence scale (called the modified OECD scale) recommended by Eurostat. The parametric scale of Buhmann et al.(1988) can also be used. The default is the modified OECD scale (see setupDataset).

Value

The value of the at-risk-of-poverty threshold.

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also

setupDataset

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
arpt(ATdataset)
**eusilc2**  

Modified synthetic EU-SILC survey data

---

**Description**

The dataset eusilc2 is the same as in the laeken package (see reference below), but transformed in order to do calculations using rtip package functions. Therefore eusilc2 is a synthetic dataset generated from real Austrian EU-SILC containing a data frame.

**Usage**

data(eusilc2)

**Format**

A data frame with 6000 rows and 7 variables:

- DB010, a numeric vector containing the year of the survey.
- DB020, a factor with one level which is the country considered.
- DB040, a factor with as many levels as there are regions in the country.
- DB090, a numeric vector containing information about household cross-sectional weight.
- HX040, an integer vector containing information about households size.
- HX050, a numeric vector containing information about the equivalised household size. The scale employed is the modified OECD scale.
- HX090, a numeric vector containing information about equivalised disposable income (with the modified OECD scale).

**Note**

The original dataset (eusilc) and the transformations done to obtain eusilc2 dataset are included in data-raw directory (source version package only).

**References**


**gini**  
*Gini index*

**Description**

Estimates the Gini inequality index of an income distribution.

**Usage**

```r
\texttt{gini(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsize = "HX040",}
\texttt{ ci = NULL, rep = 1000, verbose = FALSE)}
```

**Arguments**

- `dataset`: a data.frame containing the variables.
- `ipuc`: a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
- `hhcsw`: a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
- `hhsize`: a character string indicating the variable name of the household size. Default is "HX040".
- `ci`: a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.
- `rep`: a number to do the confidence interval using bootstrap technique.
- `verbose`: logical; if TRUE the confidence interval is plotted.

**Details**

The Gini index is calculated using the equivalised disposable income of each individual. Two types of equivalence scales can be used, the modified OECD scale and the parametric scale of Buhmann et al. (1988). The default is the modified OECD scale (see setupDataset).

**Value**

The value of the Gini index.

**Author(s)**

A. Berihuete, C.D. Ramos and M.A. Sordo
References


See Also

setupDataset

Examples

data(eusilc2)
A1dataset <- setupDataset(eusilc2, country = "AT")
gini(A1dataset)

lc

Lorenz and Generalized Lorenz curves

Description

Estimates the Lorenz and the Generalized Lorenz curves ordinates.

Usage

lc(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsiz = "HX040",
samplesize = 10, generalized = FALSE, plot = FALSE)

Arguments

dataset a data.frame containing the variables.
ipuc a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
hhcsw a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
hhsiz a character string indicating the variable name of the household size. Default is "HX040".
samplesize an integer which specifies the number of (equally spaced) percentiles to be used in the estimation of the Lorenz (or the Generalized Lorenz) ordinates. The default value is 10. If samplesize is set to "complete", ordinates are computed in each value along the whole distribution.
generalized logical; if TRUE the Generalized Lorenz curve ordinates will be estimated.
plot logical; if TRUE plots the Lorenz or Generalized Lorenz curve.
Details

Lorenz and Generalized Lorenz curves ordinates are computed using the equivalised disposable income. The equivalence scales employed are the modified OECD scale and the parametric scale of Buhmann et al. (1988) (see setupDataset).

Value

A data.frame with the following components:

- x.lg, vector of cumulated proportion of population.
- y.lg, vector with values of the Lorenz or the Generalized Lorenz curves ordinates.

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also

setupDataset

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
lc.curve <- lc(ATdataset)
str(lc.curve)

Description

This is the Spanish National Statistics Institute (INE in Spanish) release for the living conditions survey in 2014. The dataset is not modified but transformed properly in order to use functions in the package. You can obtain the raw datasets at INE.

These datasets and the function to extract the variables are available in data-raw directory (source version package only).
**Usage**

```r
data(LCS2014)
```

**Format**

A data frame with 11965 rows of 7 variables:

- DB010, a numeric vector containing the year of the survey.
- DB020, a factor with one level which is the country considered.
- DB040, a factor with as many levels as there are regions in the country.
- DB090, a numeric vector containing information about household cross-sectional weight.
- HX040, an integer vector containing information about households size.
- HX050, a numeric vector containing information about the equivilised household size. The scale employed is the modified OECD scale.
- HX090, a numeric vector containing information about equivalised disposable income (with the modified OECD scale).

**Note**

According to the INE regulation, it is mandatory to inform users that the values in this dataset were not modified.

---

`loadEUSILC` *Load the living conditions survey (EUSILC)*

**Description**

`loadEUSILC()` extracts some variables from the EUSILC survey files and transforms them into a suitable data frame in order to do the calculations.

**Usage**

```r
loadEUSILC(eusilc_d_file, eusilc_h_file)
```

**Arguments**

- `eusilc_d_file` a string with the filename of D-file.
- `eusilc_h_file` a string with the filename of H-file.

**Details**

Vector strings `varD` and `varH` contain the names of the variables needed to do the calculations with rtip package. These variables are given by Eurostat in two different files, namely basic household register (H-file) and household data (D-file).
Value

A data frame containing the variables required to use the functions in the package.

Note

We do not give examples in this function because the EUSILC survey datasets have a restricted licence for use.

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

loadLCS

Load the living conditions survey (INE)

Description

loadLCS() loads the living conditions survey from Spanish National Statistics Institute (INE in Spanish).

Usage

loadLCS(lcs_d_file, lcs_h_file)

Arguments

lcs_d_file, a string with the filename of D-file.
lcs_h_file, a string with the filename of H-file.

Details

Regularly the INE releases the living conditions survey through two different files which can be downloaded for free. The filename of these files contains the letters D and H, and these files include dozens of variables. Only some of these variables are needed to do the calculations with rtip package.

Value

A data frame containing the variables required.

Note

We have included two files in dat-raw to test the function (source version package only).

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo
### Examples

```r
## Not run: lcs2014 <- loadLCS("esudb14d.csv","esudb14h.csv")
```

### Description

Estimates the mean income per household.

### Usage

```r
mih(dataset, hhcsw = "DB090", ehhs = "HX050", edi = "HX090", ci = NULL,
     rep = 1000, verbose = FALSE)
```

### Arguments

- **dataset**: a data.frame containing the variables.
- **hhcsw**: a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
- **ehhs**: a character string indicating the variable name of the equivalised household size. Default is "HX050".
- **edi**: a character string indicating the variable name of the equivalised disposable income (with the modified OECD scale). Default is "HX090".
- **ci**: a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.
- **rep**: a number to make the confidence interval using bootstrap technique.
- **verbose**: logical; if TRUE the confidence interval is plotted.

### Value

The value of mean income per household.

### Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

### References


See Also

setupDataset.

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
mih(ATdataset)

mip
Mean income per person

Description

Estimates the mean income per person.

Usage

mip(dataset, ipuc = "ipuc", hhcsw = "DB090", hhs = "HX040",
    ehhs = "HX050", edi = "HX090", ci = NULL, rep = 1000,
    verbose = FALSE)

Arguments

dataset a data.frame containing the variables.

ipuc a character string indicating the variable name of the income per unit of consump-

hhcsw a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".

hhs a character string indicating the variable name of the household size. Default is "HX040".

ehhs a character string indicating the variable name of the equivalised household size. Default is "HX050".

edi a character string indicating the variable name of the equivalised disposable income (with the modified OECD scale). Default is "HX090".

ci a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.

rep a number to make the confidence interval using bootstrap technique.

verbose logical; if TRUE the confidence interval is plotted.

Value

The value of mean income per person.
miuc

Author(s)
A. Berihuete, C.D. Ramos and M.A. Sordo

References

See Also
setupDataset.

Examples
data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
mip(ATdataset)

Description
Estimates the mean income per unit of consumption which is the mean of the equivalised disposable income.

Usage
miuc(dataset, ipuc = "ipuc", hhcs = "DB090", hhs = "HX040",
      ci = NULL, rep = 1000, verbose = FALSE)

Arguments
dataset a data.frame containing the variables.
ipuc a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
hhcs a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
hhs a character string indicating the variable name of the household size. Default is "HX040".

References

See Also
setupDataset.

Examples
data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
mip(ATdataset)

miuc
Mean income per unit of consumption

Description
Estimates the mean income per unit of consumption which is the mean of the equivalised disposable income.

Usage
miuc(dataset, ipuc = "ipuc", hhcs = "DB090", hhs = "HX040",
      ci = NULL, rep = 1000, verbose = FALSE)

Arguments
dataset a data.frame containing the variables.
ipuc a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
hhcs a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
hhs a character string indicating the variable name of the household size. Default is "HX040".

References

See Also
setupDataset.

Examples
data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
mip(ATdataset)
Details

The equivalised disposable income is calculated using the standard equivalence scale (called the modified OECD scale) recommended by Eurostat. The parametric scale of Buhmann et al. (1988) can also be used. The default is the modified OECD scale (see setupDataset).

Value

The value of mean income per unit of consumption

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also

setupDataset.

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
miuc(ATdataset)

<table>
<thead>
<tr>
<th>OmegaGL</th>
<th>Matrix for testing Generalized Lorenz dominance</th>
</tr>
</thead>
</table>

Description

The auxiliary function OmegaGL computes the (empirical) vector of Generalized Lorenz (GL) curve ordinates and its corresponding covariance matrix. Given two income distributions, this matrix will be used to test the null hypothesis that one distribution dominates the other in the Generalized Lorenz sense.

Usage

OmegaGL(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsize = "HX040", samplesize = 10, generalized = TRUE)
Arguments

dataset a data.frame containing the variables.

ipuc a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".

hhcsw a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".

hhsize a character string indicating the variable name of the household size. Default is "HX040".

samplesize An integer representing the number of GL ordinates to be estimated. Default is 10. These ordinates are estimated at points \( p_i = \frac{i}{\text{samplesize}} \), \( i = 1, \ldots, \text{samplesize} \).

generalized logical; if FALSE the matrix for testing Lorenz dominance will be calculated.

Details

Estimation of GL curve ordinates and their covariance matrix are calculated following Beach and Davidson (1983) and Beach and Kaliski (1986). Calculations are made using the equivalised disposable income. The equivalence scales that can be employed are the modified OECD scale or the parametric scale of Buhmann et al. (1988). The default is the modified OECD scale (see setupDataset).

Value

A list with the following components:

- Omega, covariance matrix for the estimated vector of GL curve ordinates.
- gl.curve, estimated vector of GL curve ordinates.
- p, vector with components \( p_i = \frac{i}{\text{samplesize}} \), \( i = 1, \ldots, \text{samplesize} \).
- quantiles, estimated vector of quantiles of income corresponding to these \( p_i \).
- gamma, vector of estimated conditional means of income less than the quantile corresponding to \( p_i = \frac{i}{\text{samplesize}} \), \( i = 1, \ldots, \text{samplesize} \).

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also
testGL, setupDataset

OmegaTIP

Matrix for testing TIP dominance

Description

The auxiliary function OmegaTIP computes the (empirical) vector of TIP curve ordinates and its corresponding covariance matrix. Given two income distributions, this matrix will be used to test the null hypothesis that one distribution dominates the other in the TIP sense.

Usage

OmegaTIP(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsze = "HX040", arpt.value = NULL, samplesize = 50, norm = FALSE)

Arguments

dataset a data.frame containing the variables.
ipuc a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
hhcsw a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
hhsize a character string indicating the variable name of the household size. Default is "HX040".
arpt.value the at-risk-of-poverty threshold to be used (see arpt). Default is NULL which calculates arpt with default parameters.
samplesize an integer which represents the number of TIP curve ordinates to be estimated. These ordinates will be estimated at points \( p_i = i / \text{samplesize}, i = 1, \ldots, \text{samplesize} \). Default is 50.

Details

Estimation of TIP curve ordinates and their covariance matrix are made following Beach and Davidson (1983), Beach and Kaliski (1986) and Xu and Osberg (1998).

Calculations are made using the equivalised disposable income. The equivalence scales that can be employed are the modified OECD scale or the parametric scale of Buhmann et al. (1988). The default is the modified OECD scale (see setupDataset).
**Value**

A list with the following components:

- Omega, covariance matrix for the estimated vector of TIP curve ordinates.
- tip.curve estimated vector of TIP curve ordinates.

**Author(s)**

A. Berihuete, C.D. Ramos and M.A. Sordo

**References**


**See Also**

testTIP, setupDataset, arpt

---

qlr

**Value**

A list with the following components:

- Omega, covariance matrix for the estimated vector of TIP curve ordinates.
- tip.curve estimated vector of TIP curve ordinates.

**Author(s)**

A. Berihuete, C.D. Ramos and M.A. Sordo

**References**


**See Also**

testTIP, setupDataset, arpt

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**qlr**

**Description**

Estimates the quintile share ratio of an income distribution. It is defined as the ratio of total income received by the 20 percent of the population with the highest income to that received by the 20 percent of the population with the lowest income.

**Usage**

```r
qlr(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsiz = "HX040",
    ci = NULL, rep = 1000, verbose = FALSE)
```
Arguments

- `dataset` : a data.frame containing the variables.
- `ipuc` : a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
- `hhcsw` : a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
- `hhsize` : a character string indicating the variable name of the household size. Default is "HX040".
- `ci` : a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.
- `rep` : a number to do the confidence interval using bootstrap technique.
- `verbose` : logical; if TRUE the confidence interval is plotted.

Details

It is calculated using the equivalised disposable income. Two types of equivalence scales can be used, the modified OECD scale and the parametric scale of Buhmann et al. (1988). The default is the modified OECD scale (see setupDataset).

Value

The value of the income quintile share ratio.

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also

setupDataset

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
qsr(ATdataset)
Description

Estimates the relative median at-risk-of-poverty gap which is the difference between the at-risk-of-poverty threshold and the median equivalised disposable income of people below the at-risk-of-poverty threshold, expressed as a percentage of this threshold.

Usage

rmpg(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsize = "HX040",
arpt.value = NULL, ci = NULL, rep = 1000, verbose = FALSE)

Arguments

dataset a data.frame containing the variables.

ipuc a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".

hhcsw a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".

hhsize a character string indicating the variable name of the household size. Default is "HX040".

arpt.value the at-risk-of-poverty threshold to be used (see arpt). Default is NULL which calculates arpt with default parameters.

ci a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.

rep a number to do the confidence interval using bootstrap technique.

verbose logical; if TRUE the confidence interval is plotted.

Details

The equivalised disposable income is calculated using the standard equivalence scale (called the modified OECD scale) recommended by Eurostat. The parametric scale of Buhmann et al. (1988) can also be used. The default is the modified OECD scale (see setupDataset).

Value

The value of the relative median at-risk-of-poverty gap.

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo
References


See Also

arpt, setupDataset

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
rmpg(ATdataset, arpt.value = arpt(ATdataset))

Maximum of TIP curve

Description

Estimates the highest point of the TIP curve which is a measure of the intensity of poverty. It is equal to the mean poverty gap (difference between the poverty threshold and the equivalised disposable income).

Usage

s1(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsizen = "HX040",
arpt.value = NULL, norm = FALSE, ci = NULL, rep = 1000,
verbose = FALSE)

Arguments

dataset a data.frame containing the variables.

ipuc a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".

hhcsw a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".

hhsizen a character string indicating the variable name of the household size. Default is "HX040".

arpt.value the at-risk-of-poverty threshold to be used (see arpt). Default is NULL which calculates arpt with default parameters.
norm  logical; if TRUE, the normalised mean poverty gap index is calculated which adds up the extent to which individuals on average fall below the poverty threshold, and expresses it as a percentage of the poverty threshold.

ci   a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.

rep  a number to do the confidence interval using bootstrap technique.

verbose  logical; if TRUE the confidence interval is plotted.

Details

It is computed using the equivalised disposable income. The equivalence scales that can be employed are the modified OECD scale or the parametric scale of Buhmann et al. (1988). The default is the modified OECD scale (see setupDataset).

The normalised mean poverty gap index, also named FGT(1), is a particular case of the family of poverty indexes proposed by Foster, Greer and Thorbecke (1984).

Value

The value of the poverty measure.

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also

tip, setupDataset, arpt

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
s1(ATdataset, arpt.value = arpt(ATdataset), norm = TRUE)


---

**Twice the area under the TIP curve**

**Description**

Estimates the poverty measure which is twice the area under the TIP curve.

**Usage**

\[ s2(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsiz e = "HX040", arpt.value = NULL, norm = FALSE, ci = NULL, rep = 1000, verbose = FALSE) \]

**Arguments**

- **dataset**: a data.frame containing the variables.
- **ipuc**: a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
- **hhcsw**: a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
- **hhsiz e**: a character string indicating the variable name of the household size. Default is "HX040".
- **arpt.value**: the at-risk-of-poverty threshold to be used (see arpt). Default is NULL which calculates arpt with default parameters.
- **norm**: logical; if TRUE, the area under the normalised TIP curve is then estimated (see tip).
- **ci**: a scalar or vector containing the confidence level(s) of the required interval(s). Default does not calculate the confidence interval.
- **rep**: a number to do the confidence interval using bootstrap technique.
- **verbose**: logical; if TRUE the confidence interval is plotted.

**Details**

It is computed using the equivalised disposable income. The equivalence scales that can be employed are the modified OECD scale or the parametric scale of Buhmann et al. (1988). The default is the modified OECD scale (see setupDataset). This poverty index coincides with the Sen-Shorrocks-Thon index and the S(2,z) index of Sordo and Ramos (2011).

**Value**

The value of the poverty measure.

**Author(s)**

A. Berihuete, C.D. Ramos and M.A. Sordo
setupDataset

References


See Also
tip, setupDataset, arpt

Examples
data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
s2(ATdataset, arpt.value = arpt(ATdataset), norm = TRUE)

setupDataset  Setup datasets loaded from the living conditions survey

Description

Extracts and transforms variables taken directly from the EU-SILC survey.

Usage

setupDataset(dataset, country = "ES", region = NULL, s = NULL, deflator = NULL, pppr = NULL)

Arguments

dataset a data.frame containing variables in the EU-SILC microdata format.
country a character string specifying the country whose data will be considered.
region a character/vector string specifying the region(s) of the country whose data will be considered. The default (NULL) considers all regions in the country.
s a numeric value between 0 and 1 specifying the equivalence scale to be used to obtain the equivalised disposable income. The default (NULL) considers the standard modified OECD scale.
deflator numeric; a number to be used as a deflator. The default (NULL) will not apply any deflation.
pppr the purchasing power parity rate (PPPR) will be used. Default is NULL.
Details

We obtain the equivalised disposable income with the equivalence scale of Buhmann et al. (1988) by assigning a numeric value between 0 and 1 to argument s. The parameter s is called elasticity of equivalence.

The purchasing power parity exchange rate is useful for making comparisons between countries.

Value

A data.frame with the following variables:

- DB010 a numeric vector containing the year of the survey.
- DB020 a factor with one level which is the country considered.
- DB040 a factor with as many levels as there are regions in the country.
- DB090 a numeric vector containing information about household cross-sectional weight.
- HX040 an integer vector containing information about households size.
- HX050 a numeric vector containing information about the equivalised household size. The scale employed is the modified OECD scale.
- HX090 a numeric vector containing information about equivalised disposable income (with the modified OECD scale).
- ipuc a numeric vector containing the income per unit of consumption. This variable takes into account the value assigned to s and pppr (if they are not NULL).

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also

loadEUSILC, loadLCS

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
str(ATdataset)
testGL

Test for Lorenz and Generalized Lorenz dominance

Description

Statistical test procedure given by Xu (1997) to study Generalized Lorenz dominance from sample Generalized Lorenz curve estimates. Lorenz dominance from sample Lorenz curve estimates can also be studied (Beach and Kaliski, 1986).

Usage

testGL(dataset1, dataset2, ipuc = "ipuc", hhcsw = "DB090",
       hhsize = "HX040", generalized = TRUE, samplesize = 10, alpha = 0.05)

Arguments

dataset1          a data.frame containing the variables.
dataset2          a data.frame containing the variables.
ipuc              a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
hhcsw             a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
hhsize            a character string indicating the variable name of the household size. Default is "HX040".
generalized       logical; if FALSE the test will be applied to compare two Lorenz curves. Otherwise Generalized Lorenz curves will be compared.
samplesize        an integer which represents the number of Lorenz (Generalized Lorenz) curve ordinates to be estimated for comparison. The default is 10.
alpha              a scalar indicating the significance level. Default is 0.05.

Details

The null hypothesis to be tested is that the Lorenz (Generalized Lorenz) curve calculated from dataset1 dominates the one calculated from dataset2.

Value

A list with the following components:

- Tvalue the value of the test-statistic
- p.value simulated p-value of the test-statistic Tvalue (Wolak, 1989). It is calculated only when the Tvalue falls into an inconclusive region.
• decision if the Tvalue is less than the lower-bound of the critical value at the alpha significance level the decision is "Do not reject null hypothesis". If the Tvalue is greater than the upper-bound of the critical value at the alpha significance level the decision is "Reject null hypothesis". Lower and upper-bounds critical values are obtained from Kodde and Palm (1986). If Tvalue falls into an inconclusive region (between the lower- and upper-bounds) the p-value will be estimated following Wolak (1989).

Author(s)
A. Berihuete, C.D. Ramos and M.A. Sordo

References
C. M. Beach and R. Davidson (1983) Distribution-free statistical inference with Lorenz curves

See Also
OmegaGL, setupDataset

Examples
```
data(eusilc2)
A1 <- setupDataset(eusilc2, country = "AT", region = "Burgenland")
A2 <- setupDataset(eusilc2, country = "AT", region = "Carinthia")
result <- testGL(A1, A2, generalized = TRUE, samplesize = 10, alpha = 0.05)
```

Description
Statistical test procedure given by Xu and Osberg (1998) to study TIP dominance from sample TIP curve estimates.
Usage

testTIP(dataset1, dataset2, ipuc = "ipuc", hhcsw = "DB090",
        hhsiz = "HX040", pz = 0.6, same.arpt.value = NULL, norm = FALSE,
        samplesize = 50, alpha = 0.05)

Arguments

dataset1 a data.frame containing the variables.
dataset2 a data.frame containing the variables.
ipuc a character string indicating the variable name of the income per unit of con-
        sumption. Default is "ipuc".
hhcsw a character string indicating the variable name of the household cross-sectional
        weight. Default is "DB090".
hhsiz a character string indicating the variable name of the household size. Default is
        "HX040".
pz a number between 0 and 1 which represents the percentage to be used to calcu-
        late the at-risk-of-poverty threshold. The default is 0.6.
same.arpt.value a number that will be used as a common poverty threshold. If NULL, poverty
        thresholds will be calculated from each datasets (see arpt).
norm logical; if TRUE, the normalised TIP curve ordinates are computed using the
        normalised poverty gaps (poverty gaps divided by the poverty threshold).
samplesize an integer which represents the number of TIP curve ordinates to be estimated.
        The default is 50.
alpha a scalar indicating the significance level. Default is 0.05.

Details

Because the TIP curve becomes horizontal at the arpr value, it is only necessary to have the test
implemented over the interval \((0, \max\{arpr_1, arpr_2\})\). For that reason both TIP curves are trun-
cated at the same value equal to \(\max\{arpr_1, arpr_2\}\) and ordinates are only compared at points
\(p_i = i/samplesize\), where \(i = 1, \ldots, k\) in the interval \((0, \max\{arpr_1, arpr_2\})\) (see arpr func-
tion).

The null hypothesis to be tested is that the TIP curve calculated from dataset1 dominates the one
 calculated from dataset2.

Value

A list with the following components:

- \(Tvalue\), the value of the test-statistic.
- \(p.value\), simulated p-value of the test-statistic \(Tvalue\) (Wolak, 1989). It is calculated only
  when the \(Tvalue\) falls into an inconclusive region.
• decision, if the Tvalue is less than the lower-bound of the critical value at the alpha significance level the decision is "Do not reject null hypothesis". If the Tvalue is greater than the upper-bound of the critical value at the alpha significance level the decision is "Reject null hypothesis". Lower and upper-bounds critical values are obtained from Kodde and Palm (1986). If Tvalue falls into an inconclusive region (between the lower- and upper-bounds) the p-value will be estimated following Wolak (1989).

Author(s)
A. Berihuete, C.D. Ramos and M.A. Sordo

References

See Also
OmegaTIP, setupDataset, arpt, arpr

Examples
```r
data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
ATdataset1 <- setupDataset(eusilc2, country = "AT", region = "Burgenland")
ATdataset2 <- setupDataset(eusilc2, country = "AT", region = "Carinthia")
testTIP(ATdataset1, ATdataset2, same.arpt.value = arpt(ATdataset), samplesize = 50, alpha = 0.05)
```

Description
Estimates TIP curve ordinates. The TIP curve is defined by plotting the cumulated proportion of population on the x-axis and the cumulated per capita poverty gap (the distance between each income and the poverty threshold) on the y-axis from the biggest one downwards.
Usage

```r
tip(dataset, ipuc = "ipuc", hhcsw = "DB090", hhsize = "HX040",
    arpt.value = NULL, samplesize = 50, norm = FALSE, plot = FALSE)
```

Arguments

- **dataset**: a data.frame containing the variables.
- **ipuc**: a character string indicating the variable name of the income per unit of consumption. Default is "ipuc".
- **hhcsw**: a character string indicating the variable name of the household cross-sectional weight. Default is "DB090".
- **hhsize**: a character string indicating the variable name of the household size. Default is "HX040".
- **arpt.value**: the at-risk-of-poverty threshold to be used (see arpt). Default is NULL which calculates arpt with default parameters.
- **samplesize**: an integer which specifies the number of (equally spaced) percentiles to be used in the estimation of the TIP ordinates. The default is 50. If samplesize is set to "complete", ordinates are computed in each value along the whole distribution.
- **norm**: logical; if TRUE, the normalised TIP curve ordinates are computed using the normalised poverty gaps (poverty gaps divided by the poverty threshold).
- **plot**: logical; if TRUE plots the TIP curve.

Details

The TIP (Three I’s of Poverty) curve ordinates are computed using the equivalised disposable income. The equivalence scales that can be employed are the modified OECD scale or the parametric scale of Buhmann et al. (1988). The default is the modified OECD scale (see setupDataset).

Value

A data.frame with the following components:
  - `x.tip`: vector of cumulated proportion of population.
  - `y.tip`: vector with values of tip curve ordinates.

Author(s)

A. Berihuete, C.D. Ramos and M.A. Sordo

References


See Also

setupDataset, arpt

Examples

data(eusilc2)
ATdataset <- setupDataset(eusilc2, country = "AT")
tip.curve <- tip(ATdataset, arpt.value = arpt(ATdataset), norm = TRUE)
str(tip.curve)
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