Package 'EDA'

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Type Package

Title Energy Decomposition Analysis

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Version 1.3

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Description Energy decomposition analysis for measuring contributions of components
and factors on energy or carbon emission changes, as described in
B.W. Ang (2005) <doi:10.1016/j.enpol.2003.10.010>. Includes Log Mean
Devisia Index method and multi-year energy decomposition analysis using
five methods. Please refer P. Wu (2019) <doi:10.1016/j.jclepro.2019.02.200>
to use the package.

Imports ggplot2, stats

Depends R (>= 3.5.0)

License GPL-2

RoxygenNote 6.1.1

LazyData true

Suggests knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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R topics documented:

CarbonEmission   *Carbon emission data for energy decomposition analysis.*

Description

Carbon emission data for energy decomposition analysis.

Usage

```
carbon

energy

buildingarea

factordata
```

Format

carbon: A data frame of carbon emissions from multiple types of fuels and building sectors.
energy: A data frame energy consumptions from multiple types of fuels and building sectors.
buildingarea: A data frame of annual building areas. factordata: A list of data frames of
factors of carbon emission changes.

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EDA   *Energy consumption analysis for calculating carbon emission changes*

Description

Energy consumption analysis for calculating carbon emission changes

Usage

```
EDA(cdata, factordata, years = years, Factor = Factor,
    Fuel = 1, Sector = 1, method = "LMDI")
## S3 method for class 'EDA'
print(x, ...)
## S3 method for class 'EDA'
plot(x, ...)
```

Arguments

`cdata`	A data.frame of annual carbon emission or energy consumption data, which can include multiple Fuels stored by columns.
`factordata`	A list of factors' data.frame.
`years`	A numeric vector of year.
`Factor`	A vector of factor names.
`Fuel`	A vector of fuel names.
`Sector`	A vector of carbon emission or energy consumption sector names or number. If only one sector of carbon emission or energy consumption, set `Sector = 1`.
`method`	A character of energy consumption analysis method's name. One of `"LMDI"`, `"Laspeyres"`, `"Paasche"`, `"Marshall-Edgeworth"` or `"Walsh"`.
`x`	A list of EDA result.
`...`	Ignore

Author(s)

Yongze Song <yongze.song@postgrad.curtin.edu.au> and Peng Wu <peng.wu@curtin.edu.au>.

References

Ang, B. W. (2005). The LMDI approach to decomposition analysis: a practical guide. Energy policy, 33(7), 867-871.

Marlay, R. C. (1984). Trends in industrial use of energy. Science, 226, 1277-1284.

Paasche, H. Uber die Preisentwicklung der letzten Jahre. Jahrbiicher fur Nationalokonomie und Statistik, 23(1874), 168.

Marshall, A. (1887). Remedies for fluctuations of general prices.

Edgeworth, F. Y. (1925). Papers relating to political economy.

Walsh, C. M. (1921). The Problem of Estimation, a Seventeenth-century Controversy and Its Bearing on Modern Statistical Questions, Especially Index-numbers, by Correa Moylan Walsh.

See Also

LMDI

Examples

```
library(EDA)
data(carbon)
data(factordata)
## set parameters
cdata <- carbon[,-c(1,2)]
years <- carbon$year
Sector <- c("b1", "b2", "b3")
Fuel <- colnames(cdata)
Factor <- names(factordata)
## run EDA model
```

```
eda1 <- EDA(cdata, factordata, years = years, Factor = Factor,
    Fuel = Fuel, Sector = Sector, method = "LMDI")
eda1
plot(eda1)
```

LMDI   *Log Mean Devisia Index method for energy decomposition analysis*

Description

Log Mean Devisia Index method for energy decomposition analysis

Usage

```
LMDI(C0, CT, X0, XT)
## S3 method for class 'LMDI'
print(x, ...)
```

Arguments

C0	A numeric vector or a data.frame of carbon emission or energy consumption in the initial year.
CT	A numeric vector or a data.frame of carbon emission or energy consumption in the year T.
X0	A numeric vector or a data.frame of an impact factor in the initial year.
XT	A numeric vector or a data.frame of an impact factor in the year T.
x	A list of LMDI result.
...	Ignore

Author(s)

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References

Ang, B. W. (2005). The LMDI approach to decomposition analysis: a practical guide. Energy policy, 33(7), 867-871.

See Also

[EDA](EDA)

Examples

```
library(EDA)
data(carbon)
data(factordata)
## set parameters
cdata <- carbon[,-c(1,2)]
C0 <- cdata[1,]
CT <- cdata[2,]
X0 <- factordata[[2]][1,]
XT <- factordata[[2]][2,]
## run LMDI model
ed1 <- LMDI(C0, CT, X0, XT)
ed1
```

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