

Package ‘EDA’

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Type Package

Title Energy Decomposition Analysis

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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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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

<code>cdata</code>	A data.frame of annual carbon emission or energy consumption data, which can include multiple Fuels stored by columns.
<code>factordata</code>	A list of factors' data.frame.
<code>years</code>	A numeric vector of year.
<code>Factor</code>	A vector of factor names.
<code>Fuel</code>	A vector of fuel names.
<code>Sector</code>	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.
<code>method</code>	A character of energy consumption analysis method's name. One of "LMDI", "Laspeyres", "Paasche", "Marshall-Edgeworth" or "Walsh".
<code>x</code>	A list of EDA result.
<code>...</code>	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.
- Marlay, R. C. (1984). Trends in industrial use of energy. *Science*, 226, 1277-1284.
- Paasche, H. *Über die Preisentwicklung der letzten Jahre. Jahrbücher für Nationalökonomie 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](#)

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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