

Package ‘leontief’

July 22, 2025

Type Package

Title Input-Output Analysis

Version 0.3

Description An implementation of the Input-Output model developed by Wassily Leontief that represents the interdependencies between different sectors of a national economy or different regional economies.

License MIT + file LICENSE

Suggests knitr, rmarkdown, covr, roxygen2, testthat

VignetteBuilder knitr

LazyData true

Depends R (>= 2.10)

URL <https://github.com/pachadotdev/leontief>

BugReports <https://github.com/pachadotdev/leontief/issues>

Encoding UTF-8

RoxygenNote 7.3.1

NeedsCompilation no

Author Mauricio Vargas Sepulveda [aut, cre] (ORCID:
<<https://orcid.org/0000-0003-1017-7574>>),
Central Bank of Chile [dte],
University of Bio-Bio [dte]

Maintainer Mauricio Vargas Sepulveda <m.sepulveda@mail.utoronto.ca>

Repository CRAN

Date/Publication 2024-06-11 15:20:07 UTC

Contents

augmented_input_requirement	2
backward_linkage	3
employment_matrix	3

employment_multiplier	4
employment_number	4
equilibrium_output	5
forward_linkage	5
income_multiplier	6
input_requirement	6
leontief_inverse	7
multiplier_product_matrix	7
output_allocation	8
output_multiplier	8
power_dispersion	9
power_dispersion_cv	9
sensitivity_dispersion	9
sensitivity_dispersion_cv	10
transaction_matrix	10
wage_demand_matrix	11
Index	12

augmented_input_requirement
<i>Augmented input requirement</i>

Description

Augmented input requirement

Usage

augmented_input_requirement(X, w, c, d)

Arguments

X	transaction matrix
w	wage vector
c	household consumption vector
d	final demand vector

Examples

```
set.seed(200100)
X <- matrix(rnorm(100), nrow = 10)
w <- rnorm(10)
c <- rnorm(10)
d <- rnorm(10)
augmented_input_requirement(X, w, c, d)
```

backward_linkage	<i>Backward linkage</i>
------------------	-------------------------

Description

Backward linkage

Usage

backward_linkage(A)

Arguments

A input requirement matrix

employment_matrix	<i>Employment matrix (2013 data) This matrix contains the employed people by industry and the employment coefficient that is the number of people divided by the total final demand from the wage and demand matrix.</i>
-------------------	--

Description

Employment matrix (2013 data) This matrix contains the employed people by industry and the employment coefficient that is the number of people divided by the total final demand from the wage and demand matrix.

Usage

wage_demand_matrix

Format

A matrix with 12 rows and 2 columns

Author(s)

University of Bio-Bio, based on data from the National Bureau of Statistics

References

<https://revistas.ubiobio.cl/index.php/HHEE/article/download/3441/3473/>

employment_multiplier	<i>Employment multiplier</i>
-----------------------	------------------------------

Description

Employment multiplier

Usage

employment_multiplier(L, e)

Arguments

- | | |
|---|--------------------------------|
| L | Leontief inverse matrix |
| e | employment coefficients vector |

employment_number	<i>Employment number</i>
-------------------	--------------------------

Description

Employment number

Usage

employment_number(L, e, c)

Arguments

- | | |
|---|--------------------------------|
| L | Leontief inverse matrix |
| e | employment coefficients vector |
| c | change in final demand |

equilibrium_output	<i>Equilibrium output</i>
--------------------	---------------------------

Description

Equilibrium output

Usage

```
equilibrium_output(L, d)
```

Arguments

L	Leontief inverse matrix
d	final demand vector

Examples

```
set.seed(200100)
L <- matrix(rnorm(100), nrow = 10)
d <- rnorm(10)
equilibrium_output(L, d)
```

forward_linkage	<i>Forward linkage</i>
-----------------	------------------------

Description

Forward linkage

Usage

```
forward_linkage(A)
```

Arguments

A	input requirement matrix
---	--------------------------

income_multiplier	<i>Income multiplier</i>
-------------------	--------------------------

Description

Income multiplier

Usage

```
income_multiplier(L, w)
```

Arguments

L	Leontief inverse matrix
w	wage vector

input_requirement	<i>Input requirement</i>
-------------------	--------------------------

Description

Input requirement

Usage

```
input_requirement(X, d)
```

Arguments

X	transaction matrix
d	final demand vector

Examples

```
set.seed(200100)
X <- matrix(rnorm(100), nrow = 10)
d <- rnorm(10)
input_requirement(X, d)
```

leontief_inverse	<i>Leontief inverse</i>
------------------	-------------------------

Description

Leontief inverse

Usage

```
leontief_inverse(A)
```

Arguments

A	input requirement matrix
---	--------------------------

Examples

```
set.seed(200100)
A <- matrix(rnorm(100), nrow = 10)
leontief_inverse(A)
```

multiplier_product_matrix	<i>Multiplier product matrix</i>
---------------------------	----------------------------------

Description

Multiplier product matrix

Usage

```
multiplier_product_matrix(L)
```

Arguments

L	Leontief inverse matrix
---	-------------------------

output_allocation	<i>Output allocation</i>
-------------------	--------------------------

Description

Output allocation

Usage

```
output_allocation(X, d)
```

Arguments

X	transaction matrix
d	final demand vector

Examples

```
set.seed(200100)
X <- matrix(rnorm(100), nrow = 10)
d <- rnorm(10)
output_allocation(X, d)
```

output_multiplier	<i>Output multiplier</i>
-------------------	--------------------------

Description

Output multiplier

Usage

```
output_multiplier(L)
```

Arguments

L	Leontief inverse matrix
---	-------------------------

Examples

```
set.seed(200100)
L <- matrix(rnorm(100), nrow = 10)
output_multiplier(L)
```

power_dispersion	<i>Power of dispersion</i>
------------------	----------------------------

Description

Power of dispersion

Usage

power_dispersion(L)

Arguments

L	Leontief inverse matrix
---	-------------------------

power_dispersion_cv	<i>Power of dispersion coefficient of variation</i>
---------------------	---

Description

Power of dispersion coefficient of variation

Usage

power_dispersion_cv(L)

Arguments

L	Leontief inverse matrix
---	-------------------------

sensitivity_dispersion	<i>Sensitivity of dispersion coefficient of variation</i>
------------------------	---

Description

Sensitivity of dispersion coefficient of variation

Usage

sensitivity_dispersion(L)

Arguments

L	Leontief inverse matrix
---	-------------------------

sensitivity_dispersion_cv

Sensitivity of dispersion coefficient of variation

Description

Sensitivity of dispersion coefficient of variation

Usage

sensitivity_dispersion_cv(L)

Arguments

L Leontief inverse matrix

transaction_matrix

Transaction matrix (2013 data) This matrix contains the production of the chilean economy divided into 12 industries. The measuring unit is CLP million of the year 2013

Description

Transaction matrix (2013 data) This matrix contains the production of the chilean economy divided into 12 industries. The measuring unit is CLP million of the year 2013

Usage

transaction_matrix

Format

A matrix with 12 rows and 12 columns

Author(s)

Central Bank of Chile

References

<https://si3.bcentral.cl/estadisticas/Principal1/Excel/CCNN/cdr/excel.html>

wage_demand_matrix	<i>Wage and demand matrix (2013 data) This matrix contains the wage, intermediate demand and disaggregated final demand of the chilean economy divided into 12 industries. The final demand is given by components (household consumption, government consumption, etc.) and aggregated. The measuring unit is CLP million of the year 2013.</i>
--------------------	--

Description

Wage and demand matrix (2013 data) This matrix contains the wage, intermediate demand and disaggregated final demand of the chilean economy divided into 12 industries. The final demand is given by components (household consumption, government consumption, etc.) and aggregated. The measuring unit is CLP million of the year 2013.

Usage

wage_demand_matrix

Format

A matrix with 12 rows and 9 columns

Author(s)

Central Bank of Chile

References

<https://si3.bcentral.cl/estadisticas/Principal1/Excel/CCNN/cdr/excel.html>

Index

* data

- employment_matrix, 3
- transaction_matrix, 10
- wage_demand_matrix, 11

augmented_input_requirement, 2

backward_linkage, 3

employment_matrix, 3
employment_multiplier, 4
employment_number, 4
equilibrium_output, 5

forward_linkage, 5

income_multiplier, 6
input_requirement, 6

leontief_inverse, 7

multiplier_product_matrix, 7

output_allocation, 8
output_multiplier, 8

power_dispersion, 9
power_dispersion_cv, 9

sensitivity_dispersion, 9
sensitivity_dispersion_cv, 10

transaction_matrix, 10

wage_demand_matrix, 11