**aux_matrix**

*Build our auxiliary matrices to estimate entry models*

**Description**

Build our auxiliary matrices to estimate entry models

**Usage**

```r
aux_matrix(data, y, N_max, n)
```

**Arguments**

data: A `data.frame` object containing your data

y: A string indicating the outcome variable

N_max: An integer indicating the maximum number of competitors

n: Number of observations in data

**Value**

A list of the auxiliary matrices

---

**br1**

*Build our optimization function*

**Description**

Build our optimization function

**Usage**

```r
br1(params, n, N_max, l_params, A1, A2, S, N)
```

**Arguments**

params: Parameters to construct function

n: Number of observations in data

N_max: An integer indicating the maximum number of competitors

l_params: Length of parameters vector

A1: Auxiliary matrix A1

A2: Auxiliary matrix A2

S: Size of the market

N: Vector of zeros
Value

The function to be optimized

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**br2**

*Build our optimization function*

---

**Description**

Build our optimization function

**Usage**

```
br2(params, n, N_max, A1, A2, S1, S2, N)
```

**Arguments**

- **params** Parameters to construct function
- **n** Number of observations in data
- **N_max** An integer indicating the maximum number of competitors
- **A1** Auxiliary matrix A1
- **A2** Auxiliary matrix A2
- **S1** First variable for size of the market
- **S2** Second variable for size of the market
- **N** Vector of zeros

Value

The function to be optimized

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**em_2var**

*Two-Variable Entry Model*

---

**Description**

Estimate entry model with two variables for the market size.

**Usage**

```
em_2var(data, Sm1, Sm2, y, N_max = 5, alpha0 = rep(0.1, N_max),
         gamma0 = rep(1, N_max))
```
Arguments

data A data.frame object containing your data
Sm1 A string indicating the main market size variable, present in data
Sm2 A string indicating the second market size variable, present in data
y A string indicating the outcome variable, present in data
N_max An integer indicating the maximum number of competitors. Defaults to 5.
alpha0 A vector of type numeric and length N_max indicating the initial condition for alpha. Defaults to a vector of 0.1’s.
gamma0 A vector of type numeric and length N_max indicating the initial condition for gamma. Defaults to a vector of 1’s.

Value
A tibble with critical market sizes and estimated parameters, as explained in Bresnahan and Reiss (1991)

Author(s)
Guilherme N. Jardim, Department of Economics, Pontifical Catholic University of Rio de Janeiro

References

Examples

tb <- data.frame(Sm1 = 1:5, Sm2 = 1:5, y = 1:5)

# estimate default model
em_n5 <- em_2var(tb, "Sm1", "Sm2", "y")

# estimate model with 3 competitors only
em_n3 <- em_2var(tb, "Sm1", "Sm2", "y", N_max = 3)

## Not run:
# estimate model with different initial conditions
em_difc <- em_2var(tb, "Sm1", "Sm2", "y", alpha0 = rep(0.2, 5), gamma0 = rep(1.1, 5))

# estimate model with example data
tb <- load_example_data()
em <- em_2var(tb, "Populacao", "RendaPerCapita", "n_agencias")

## End(Not run)
em_basic Basic Entry Model

Description
Estimate basic entry model with only one variable for the market size.

Usage
em_basic(data, Sm, y, N_max = 5, alpha0 = rep(0.1, N_max),
          gamma0 = rep(1, N_max))

Arguments
data A data.frame object containing your data
Sm A string indicating the market size variable, present in data
y A string indicating the outcome variable, present in data
N_max An integer indicating the maximum number of competitors. Defaults to 5.
alpha0 A vector of type numeric and length N_max indicating the initial condition for alpha. Defaults to a vector of 0.1’s.
gamma0 A vector of type numeric and length N_max indicating the initial condition for gamma. Defaults to a vector of 1’s.

Value
A tibble with critical market sizes and estimated parameters, as explained in Bresnahan and Reiss (1991)

Author(s)
Guilherme N. Jardim, Department of Economics, Pontifical Catholic University of Rio de Janeiro

References

Examples
tb <- data.frame(Sm = 1:5, y = 1:5)
# estimate default model
em_n5 <- em_basic(tb, "Sm", "y")
# estimate model with 3 competitors only
em_n3 <- em_basic(tb, "Sm", "y", N_max = 3)
## Not run:
#' estimate model with different initial conditions
# em_difc <- em_basic(tb, "Sm", "y", alpha0 = rep(0.2, 5), gamma0 = rep(1.1, 5))

#' estimate model with example data
tb <- load_example_data()
em <- em_basic(tb, "Populacao", "n_agencias")

## End(Not run)

---

### load_example_data

**Load example dataset**

**Description**

Load example dataset

**Usage**

```r
load_example_data()
```

**Value**

Example dataset as tibble

**Author(s)**

Guilherme N. Jardim, Department of Economics, Pontifical Catholic University of Rio de Janeiro
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