

# Package ‘entrymodels’

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**Type** Package

**Title** Estimate Entry Models

**Version** 0.2.1

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**Description** Tools for measuring empirically the effects of entry in concentrated markets, based in Bresnahan and Reiss (1991) <<https://www.jstor.org/stable/2937655>>.

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**Encoding** UTF-8

**LazyData** true

**Imports** stats, magrittr, dplyr, readr

**RoxygenNote** 6.1.1

**NeedsCompilation** no

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**Repository** CRAN

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|------------|--|
| aux_matrix | <i>Build our auxiliary matrices to estimate entry models</i> |
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**Description**

Build our auxiliary matrices to estimate entry models

**Usage**

```
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

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|     |  |
|-----|--|
| br1 | <i>Build our optimization function</i> |
|-----|--|

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**Description**

Build our optimization function

**Usage**

```
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 | <i>Build our optimization function</i> |
|-----|--|

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**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 | <i>Two-Variable Entry Model</i> |
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**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**

Bresnahan, T. F., & Reiss, P. C. (1991). Entry and competition in concentrated markets. *Journal of political economy*, 99(5), 977-1009.

**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)
```

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|          |                          |
|----------|--------------------------|
| em_basic | <i>Basic Entry Model</i> |
|----------|--------------------------|

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**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**

|                     |  |
|---------------------|--|
| <code>data</code>   | A <code>data.frame</code> object containing your data  |
| <code>Sm</code>     | A string indicating the market size variable, present in data  |
| <code>y</code>      | A string indicating the outcome variable, present in data  |
| <code>N_max</code>  | An integer indicating the maximum number of competitors. Defaults to 5.  |
| <code>alpha0</code> | A vector of type <code>numeric</code> and length <code>N_max</code> indicating the initial condition for alpha. Defaults to a vector of 0.1's. |
| <code>gamma0</code> | A vector of type <code>numeric</code> and length <code>N_max</code> 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**

Bresnahan, T. F., & Reiss, P. C. (1991). Entry and competition in concentrated markets. *Journal of political economy*, 99(5), 977-1009.

**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)
```

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|                   |                             |
|-------------------|-----------------------------|
| load_example_data | <i>Load example dataset</i> |
|-------------------|-----------------------------|

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**Description**

Load example dataset

**Usage**

```
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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