Package ‘nopp’

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Description Estimation of party/candidate ideological positions that correspond to a Nash equilibrium along a one-dimensional space.
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**nopp-package  
*Nash Optimal Party Positions***

**Description**

Estimation of party/candidate ideological positions that correspond to a Nash equilibrium along a one-dimensional space.

**Details**

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*nopp* is a package for R which enables to compute party/candidate ideological positions that correspond to a Nash Equilibrium along a one-dimensional space. It accommodates alternative motivations in (each) party strategy while allowing to estimate the uncertainty around their optimal positions through two different procedures (bootstrap and MC).

**Author(s)**

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**References**


Merrill, Samuel III, and James Adams (2001), Computing Nash Equilibria in Probabilistic, Multi-party Spatial Models with Nonpolicy Components, Political Analysis, 9, 347–61
Usage

equilibrium(startL modelL dataL tolerance = 1e-05, max.iter = 100,
coal = 0, alpha = 0, margin = NULL, fixed = NULL, gamma = 0,
boot = 0, MC = 0, self.var = "self", prox.var="prox",
position=NULL, votes=NULL, quadratic=TRUE, conf.level = 0.95)

Arguments

model the mlogit model analysis
data the data set
tolerance tolerance in the convergence of Nash equilibrium. Default 1e-5
max.iter max iteration to convergence in Nash equilibrium. Default 100
coal a list specifying electoral coalitions. See Details.
alpha the weight of coalition vote-share in party utility function. Default = 0. See Details.
margin a list specifying the vote share margin to be maximized of a party/coalition against other party/coalition. See Details.
fixed a list of fixed party positions. See Details.
gamma the weight among nash and fixedarty position. Default=0. See Details.
boot number of bootstrap replications. See Details.
MC number of Monte Carlo replications. See Details.
self.var character: name of self-placement of respondent. See Details.
prox.var character: name of party-placement variable. See Details.
position a named list: of perceived position of parties. See Details.
votes a named list: of actual vote share at election. See Details.
quadratic a logical value: if FALSE the linear utility function is used to calculate the proximity. See Details.
conf.level significant level for empirical Monte Carlo or bootstrap confidence intervals.

Details

See vignette.

Value

an object of class nash.eq

Note

See the vignette for detailed explanations and other working examples.
Author(s)
Luigi Curini, Stefano M. Iacus

References
Competition. Cambridge: Cambridge University Press
Merrill, Samuel III, and James Adams (2001), Computing Nash Equilibria in Probabilistic, Multi-
party Spatial Models with Nonpolicy Components, Political Analysis, 9, 347–61

See Also
See Also as plot.nash.eq

Examples
```r
# Not run:
data(italy2006)
str(italy2006)
italy2006[1:2, 1:14]

election <- set.data(italy2006, shape="wide", choice="vote",
varying=c(5:14), sep=".")
str(election)

m <- mlogit(vote~prox+partyID | gov_perf+sex+age+education,
election, reflevel = "UL")
summary(m)

true.pos <- list(FI=7.59, UL=3.50, RC=1.95, AN=8.08, UDC=5.66)
true.votes <- list(FI=.24, UL=.40, RC=.10, AN=.18, UDC=.08)
# model 1: comparison against true votes and party positions
nash.eq <- equilibrium(model=m, data=election, pos=true.pos,
votes=true.votes)
nash.eq

par(mfrow=c(3,1))
plot(nash.eq)
par(mfrow=c(1,1))

# model 2: colation behaviours
coal1 <- list(FI=1, UL=2, RC=2, AN=1, UDC=1)
alpha1 <- list(FI=0.5, UL=0.5, RC=0.5, AN=0.5, UDC=0.5)
nash.eq <- equilibrium(model=m, data=election, coal=coal1, alphs=alpha1)
nash.eq

# model 3: colation behaviours
coal1 <- list(FI=1, UL=2, RC=2, AN=1, UDC=1)
alpha1 <- list(FI=0.7, UL=0.8, RC=0.1, AN=0.5, UDC=0.9)
```
nash.eq <- equilibrium(model=m, data=election, coal=coal1, alpha=alpha1)
nash.eq

# model 4: rivals tends to separate each other
nash.eq <- equilibrium(model=m, data=election, margin=list(FI="UL", UL="FI"))
nash.eq

# model 5: fixed position averaged with Nash equilibrium solution
nash.eq <- equilibrium(model=m, data=election, fixed=list(RC=1), gamma=0.2)
nash.eq

# model 6: rivals tends to separate each other with
# fixed position averaged with Nash equilibrium solution
nash.eq <- equilibrium(model=m, data=election, margin=list(FI="UL", UL="FI"), fixed=list(RC=1), gamma=0.2)
nash.eq

# model 7: coalition and fixed position averaged with
# Nash equilibrium solution
coal1 <- list(FI=1, UL=2, RC=2, AN=1, UDC=1)
alpha1 <- list(FI=0.7, UL=0.8, RC=0.5, AN=0.5, UDC=0.5)
nash.eq <- equilibrium(model=m, data=election, coal=coal1, alpha=alpha1, fixed=list(RC=1), gamma=0.2)
nash.eq

# model 8: Bootstrap analysis
set.seed(280715)
nash.eq <- equilibrium(model=m, data=election, boot=10)
nash.eq

# model 9: Monte Carlo simulation
set.seed(280715)
nash.eq <- equilibrium(model=m, data=election, MC=10)
nash.eq

## End(Not run)

---

**italy2006** 2006 *Italian General Election survey*

**Description**

2006 Italian General Election survey, with quadratic ideological proximity.

**Usage**

data(italy2006)
Format

A data frame with 438 observations on the following 18 variables.

country  country name
id  id of respondent
vote  a factor with levels FI UL AN UDC RC for each party voted
self  self-placement of respondent on a 0 to 10 left-right scale
prox_FI  see Details.
prox_UL  see Details.
prox_AN  see Details.
prox_UDC  see Details.
prox_RC  see Details.
partyID_FI  see Details.
partyID_UL  see Details.
partyID_AN  see Details.
partyID_UDC  see Details.
partyID_RC  see Details.
sex  gender variable 1 = female
age  see Details.
education  see Details.
sexc  see Details.
gov_perf  see Details.

Details

In this survey respondents were asked to indicate which party they voted for in the 2006 Election. The data concerns 5 parties: UL (Ulivo), RC (Communist Refoundation party), FI (Forza Italia), AN (National Alliance) and UDC (Union of Christian Democrats).

prox_* quadratic ideological distance between the respondent and a party *
partyID_* binary variable equals to 1 if the respondent declares to feel herself close to party *
age : 1 = "18-24 years", 2 = "25-34", 3 = "35-44", 4 = "45-54", 5 = "55-64", 6 = "65 +"
education : 0 = "up to primary school", 1 = "incomplete secondary", 2 = "secondary completed", 3 = "post-secondary trade", 4 = "university undergraduate degree inc", 5 = "university undergraduate degree comp"
gov_perf : 1 = "very good job", 2 = "good job", 3 = "bad job", 4 = "very bad job"

Source


Examples

data(italy2006)
head(italy2006)
Description

2006 Italian General Election survey, with linear ideological proximity.

Usage

data(italy2006.lin)

Format

A data frame with 438 observations on the following 18 variables.

country  country name
id       id of respondent
vote     a factor with levels FI UL AN UDC RC for each party voted
self     self-placement of respondent on a 0 to 10 left-right scale
proxlin_FI see Details.
proxlin_UL see Details.
proxlin_AN see Details.
proxlin_UDC see Details.
proxlin_RC see Details.
partyID_FI see Details.
partyID_UL see Details.
partyID_AN see Details.
partyID_UDC see Details.
partyID_RC see Details.
sex       gender variable 1 = female
age       see Details.
education see Details.
gov_perf  see Details.

Details

In this survey respondents were asked to indicate which party they voted for in the 2006 Election. The data concerns 5 parties: UL (Ulivo), RC (Communist Refoundation party), FI (Forza Italia), AN (National Alliance) and UDC (Union of Christian Democrats).

prox_* linear ideological distance between the respondent and a party * placement
partyID_* binary variable equals to 1 if the respondent declares to feel herself close to party *
age : 1 = "18-24 years", 2 = "25-34", 3 = "35-44", 4 = "45-54", 5 = "55-64", 6 = "65 +"
education : 0 = "up to primary school", 1 = "incomplete secondary", 2 = "secondary completed", 3 = "post-secondary trade", 4 = "university undergraduate degree inc", 5 = "university undergraduate degree comp"
gov_perf : 1 = "very good job", 2 = "good job", 3 = "bad job", 4 = "very bad job"

Source


Examples

data(italy2006.lin)
head(italy2006.lin)
## maybe str(italy2006.lin) ; plot(italy2006.lin) ...

italy2006.wide 2006 Italian General Election survey

Description

2006 Italian General Election survey - wide format

Usage

data(italy2006.wide)

Format

A data frame with 524 observations on the following 15 variables.
country country name
id id of respondent
vote a factor with levels FI UL AN UDC RC for each party voted
self self-placement of respondent on a 0 to 10 left-right scale
FI see Details.
DS see Details.
AN see Details.
DL see Details.
UDC see Details.
RC see Details.
pID see Details.
sex gender variable 1 = female
age see Details.
education see Details.
gov_perf see Details.
Details

In this survey respondents were asked to indicate which party they voted for in the 2006 Election. The data concerns 5 parties: UL (Ulivo), RC (Communist Refoundation party), FI (Forza Italia), AN (National Alliance) and UDC (Union of Christian Democrats). The dataset is in wide format. The variable from FI to RC identify the placement of those parties, on a 0 to 10 left-right scale, as perceived by the respondent.

pid is a variable that identifies the partisanship of the respondent (where 0=stands for no partyID, 1 = FI partyID, 23 = UL partyID, 3 = AN partyID, 4 = UDC partyID, 6 = RC partyID)

age : 1 = "18-24 years", 2 = "25-34", 3 = "35-44", 4 = "45-54", 5 = "55-64", 6 = "65 +"

education : 0 = "up to primary school", 1 = "incomplete secondary", 2 = "secondary completed", 3 = "post-secondary trade", 4 = "university undergraduate degree inc", 5 = "university undergraduate degree comp"

gov_perf : 1 = "very good job", 2 = "good job", 3 = "bad job", 4 = "very bad job"

Source


Examples

data(italy2006.wide)
head(italy2006.wide)
## maybe str(italy2006.wide) ; plot(italy2006.wide) ...

Description

Show the NEWS file of the nopp package.

Usage

noppNews()

Value

None.
plot.nash.eq

Plot function for Nash equilibrium object

Description

Plot function for Nash equilibrium object

Usage

## S3 method for class 'nash.eq'
plot(x, ...)

Arguments

x

a nash.eq object

... additional arguments passed to the inner plot function

Details

See vignette.

Author(s)

Luigi Curini, Stefano M. Iacus

See Also

See Also as equilibrium

Examples

## Not run:
data(italy2006)
election <- set.data(italy2006, shape="wide", choice="vote", varying=c(5:14), sep="_")
m <- mlogit(vote~prox+partyID | gov_perf+sex+age+education, election, reflevel = "UL")
true.pos <- list(FI=7.59, UL=3.50, RC=1.95, AN=8.08, UDC=5.66)
true.votes <- list(FI=.24, UL=.40, RC=.10, AN=.18, UDC=.08)

# comparison against true votes and party positions
nash.eq <- equilibrium(model=m, data=election, pos=true.pos, votes=true.votes)
nash.eq
par(mfrow=c(3,1))
plot(nash.eq)

# bootstrap confidence intervals
nash.eq <- equilibrium(model=m, data=election, boot=10)
set.data

nash.eq
plot(nash.eq)

par(mfrow=c(1,1))

## End(Not run)

---

set.data

Prepares data for Nash equilibrium

Description

Prepares data for Nash equilibrium

Usage

set.data(data, shape="wide", choice, varying, sep="_")

Arguments

data the data set
shape either wide or long. Default wide. See Details.
choice the variable indicating the choice made: it can be either a logical vector, a numerical vector with 0 where the alternative is not chosen, a factor with level 'yes' when the alternative is chosen.
varying the indexes of the variables that are alternative specific. See Details.
sep the seperator of the variable name and the alternative name (only relevant for a wide data.frame). See Details.

Details

For general examples see the vignette. The arguments shape, choice, varying and sep as as in the mlogit.data function.

Value

A mlogit.data object, which is a data.frame in long format, i.e. one line for each alternative. It has a index attribute, which is a data.frame that contains the index of the choice made ('chid'), the index of the alternative ('alt') and, if any, the index of the individual ('id'). The choice variable is a boolean which indicates the choice made. This function use reshape if the data.frame is in wide format. It also has the attribute call for further data manipulation in the bootstrap task of equilibrium.

Note

See the vignette for detailed explanations and other working examples.
Author(s)
Luigi Curini, Stefano M. Iacus

Examples

```r
## Not run:
data(italy2006)

str(italy2006)
italy2006[1:2,1:14]
election <- set.data(italy2006, shape="wide", choice="vote", varying=c(5:14), sep="_")
str(election)

m <- mlogit(vote~prox+partyID | gov_perf+sex+age+education, election, reflevel = "UL")
summary(m)

true.pos <- list(FI=7.59, UL=3.50, RC=1.95, AN=8.08, UDC=5.66)
true.votes <- list(FI=.24, UL=.40, RC=.10, AN=.18, UDC=.08)
# model: comparison against true votes and party positions
nash.eq <- equilibrium(model=m, data=election, pos=true.pos, votes=true.votes)
nash.eq

## End(Not run)
```
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