`cindex` – Computing indices of cleavage strength and confidence intervals

Version 1.1, March 2007   Romain Lachat

`cindex` is a program for Stata that computes four indices of cleavage strength (absolute kappa, relative kappa, absolute lambda, relative lambda) as well as the corresponding confidence intervals. These indices are defined and their properties discussed in the paper Measuring Cleavage Strength (see below for reference). The kappa and lambda indices are computed on the basis of the regression coefficients of a model of voting choice. The confidence intervals are estimated by simulating the distribution of the regression coefficients.

Syntax

cindex modelname depvar indepvars [**if** exp] [**in** range] [, options]

Options:

nolog	Does not display the results of the regression model
level(#)	Specifies the significance level for the confidence interval. The default value is **level(95)**
gsize(V)	Specifies the name of a vector indicating the size of social groups. See below the section on 'Setting the size of social groups'
cvariables(varlist)	Indicates the list of control variables. See below the section on 'Control variables'
cvalues(numlist)	Indicates the values at which the control variables must be set when computing the indices. See below the section on 'Control variables'
save(stubname)	Indicates a stub name for saving the simulated values of the indices of cleavage strength. This option creates four new variables: stubname_absk (absolute kappa), stubname_absl (absolute lambda), stubname_relk (relative kappa), and stubname_rell (relative lambda).
Other options	Other options of the programme clarify or of the regression model can be specified

Description and examples

Specify a regression model (typically a multinomial logit) with voting choice as the dependent variable and a set of dummies for social groups as independent variables. `cindex` will estimate the corresponding model, use Clarify to simulate the distribution of the regression parameters, and compute the four indices of cleavage strength and their confidence intervals. Without options, the model cannot include control variables. With four social groups (i.e., three dummies for the groups 2 to 4, the group 1 being the reference category), the indices of cleavage strength may for example be estimated as follows:

```
. cindex mlogit vote group2 group3 group4
```

In addition to the regression results, `cindex` produces a table with the estimated values of the four indices:

```
  Cleavage index  |    Mean      Std. Dev.     [95% Conf. Interval]
------------------+---------------------------------------------------
    Absolute kappa |   .1301521    .0111929     .1079652    .1517046
   Absolute lambda |   .1404775    .0115525     .1168729    .1623203
     Relative kappa |   4.302624    .1804856     3.967423    4.657509
    Relative lambda |   .8937702    .0650902     .7693617    1.028389
```

Control variables

Control variables can be included using the options **cvariables()** and **cvalues()**. The first option gives the list of variables and the second one the values at which they must be set when computing the indices. In the example above, we can control for respondents' age and gender and estimate the indices for male voters (coded 0) at the age of 45:

```
. cindex mlogit vote group2 group3 group4, cvariables(age gender)
  cvalues(45 0)
```

Setting the size of social groups

The option **gsize()** allows one to set the size of social groups used when computing the indices, and thus to control for structural dealignment. The size of groups must be specified in a row vector, with the size of the reference category in column 1. The sizes must be expressed as proportions and sum to 1.
For example, we can define a vector with the size of the four social groups as:

```
. matrix A=(.15, .25, .45,.15)
```

and estimate the values of the index with these group sizes:

```
. cindex mlogit vote group2 group3 group4, gsize(A)
```

Quasi-complete separation

Relative indices cannot be computed in the case of quasi-complete separation, that is, when some party is not supported at all in a given social group. In such a situation, the table produced by `cindex` will mention that relative kappa and relative lambda cannot be computed, for example:

```
  Cleavage index  |    Mean      Std. Dev.     [95% Conf. Interval]
------------------+---------------------------------------------------
    Absolute kappa |   .1076999    .0139092     .0796142    .1303476
   Absolute lambda |    .125661    .0142895     .094994     .1440023
     Relative kappa |  Cannot be computed due to quasi-complete separation
    Relative lambda |  Cannot be computed due to quasi-complete separation
```

This problem does not affect absolute indices: while some of the regression coefficients are undefined in the case of quasi-complete separation, the corresponding probabilities of voting choice will be equal to 0 or 1.[1]

References

Lachat, Romain (2006). 'Measuring Cleavage Strength'. Paper prepared for delivery at the 2006 Annual Meeting of the American Political Science Association, Philadelphia, August 31 – September 3. Revised version available at http://www.romain-lachat.ch/papers/

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[1] In this situation, however, the probabilities estimated by clarify will be missing for some of the sets of simulated values of the regression parameters. `cindex` avoids this problem by drawing new series of simulated probabilities, until the number of non-missing probabilities is equal to the number of simulations set for clarify.