fmm: betareg — Finite mixtures of beta regression models

Description Quick start Menu Syntax Remarks and examples
Stored results Methods and formulas Reference Also see

Description

`fmm: betareg` fits mixtures of beta regression models to a fractional outcome whose values are greater than 0 and less than 1; see [FMM] **fmm** and [R] **betareg** for details.

Quick start

Mixture of two beta distributions of `y`

```
fmm 2: betareg y
```

Mixture of two beta regression models of `y` on `x1` and `x2`

```
fmm 2: betareg y x1 x2
```

Same as above, but with class probabilities depending on `z1` and `z2`

```
fmm 2, lcprob(z1 z2): betareg y x1 x2
```

With robust standard errors

```
fmm 2, vce(robust): betareg y x1 x2
```

Constrain coefficients on `x1` and `x2` to be equal across classes

```
fmm 2, lcinvariant(coef): betareg y x1 x2
```

Menu

Statistics > FMM (finite mixture models) > Beta regression

Syntax

Basic syntax

`fmm` # `: betareg` *depvar* [*indepvars*] [`,` *options*]

Full syntax

`fmm` # [*if*] [*in*] [*weight*] [`,` *fmmopts*]`: betareg` *depvar* [*indepvars*] [`,` *options*]

where # specifies the number of class models.

options	Description
Model	
`noconstant`	suppress the constant term
`link(`*linkname*`)`	specify link function for the conditional mean; default is `link(logit)`

indepvars may contain factor variables; see **[U] 11.4.3 Factor variables**.

depvar and *indepvars* may contain time-series operators; see **[U] 11.4.4 Time-series varlists**.

For a detailed description of *options*, see *Options* in [R] **betareg**.

linkname	Description
`logit`	logit
`probit`	probit
`cloglog`	complementary log–log

fmmopts	Description
Model	
`lcinvariant(`*pclassname*`)`	specify parameters that are equal across classes; default is `lcinvariant(none)`
`lcprob(`*varlist*`)`	specify independent variables for class probabilities
`lclabel(`*name*`)`	name of the categorical latent variable; default is `lclabel(Class)`
`lcbase(`#`)`	base latent class
`constraints(`*constraints*`)`	apply specified linear constraints
SE/Robust	
`vce(`*vcetype*`)`	*vcetype* may be `oim`, `opg`, `robust`, or `cluster` *clustvar*
Reporting	
`level(`#`)`	set confidence level; default is `level(95)`
`nocnsreport`	do not display constraints
`noheader`	do not display header above parameter table
`nodvheader`	do not display dependent variables information in the header
`notable`	do not display parameter table
display_options	control columns and column formats, row spacing, line width, display of omitted variables and base and empty cells, and factor-variable labeling
Maximization	
maximize_options	control the maximization process
`startvalues(`*svmethod*`)`	method for obtaining starting values; default is `startvalues(factor)`
`emopts(`*maxopts*`)`	control EM algorithm for improved starting values
`noestimate`	do not fit the model; show starting values instead
`collinear`	keep collinear variables
`coeflegend`	display legend instead of statistics

varlist may contain factor variables; see **[U] 11.4.3 Factor variables**.

`by`, `collect`, `statsby`, and `svy` are allowed; see **[U] 11.1.10 Prefix commands**.

`vce()` and weights are not allowed with the `svy` prefix; see [SVY] **svy**.

`fweights`, `iweights`, and `pweights` are allowed; see **[U] 11.1.6 weight**.

`collinear` and `coeflegend` do not appear in the dialog box.

See **[U] 20 Estimation and postestimation commands** for more capabilities of estimation commands.

For a detailed description of *fmmopts*, see *Options* in [FMM] **fmm**.

pclassname	Description
`cons`	intercepts and cutpoints
`coef`	fixed coefficients
`errvar`	covariances of errors
`scale`	scaling parameters
`all`	all the above
`none`	none of the above; the default

Remarks and examples

For a general introduction to finite mixture models, see [FMM] **fmm intro**. For general information about beta regression, see [R] **betareg**. For examples using `fmm`, see examples in *Contents*.

Stored results

See *Stored results* in [FMM] **fmm**.

Methods and formulas

See *Methods and formulas* in [FMM] **fmm**.

Reference

Gray, L. A., and M. Hernández-Alava. 2018. A command for fitting mixture regression models for bounded dependent variables using the beta distribution. *Stata Journal* 18: 51–75.

Also see

[FMM] **fmm** — Finite mixture models using the fmm prefix

[FMM] **fmm intro** — Introduction to finite mixture models

[FMM] **fmm postestimation** — Postestimation tools for fmm

[FMM] **Glossary**

[R] **betareg** — Beta regression

[SVY] **svy estimation** — Estimation commands for survey data

Stata, Stata Press, Mata, NetCourse, and NetCourseNow are registered trademarks of StataCorp LLC. Stata and Stata Press are registered trademarks with the World Intellectual Property Organization of the United Nations. StataNow is a trademark of StataCorp LLC. Other brand and product names are registered trademarks or trademarks of their respective companies. Copyright © 1985–2025 StataCorp LLC, College Station, TX, USA. All rights reserved.

For suggested citations, see the FAQ on citing Stata documentation.