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## 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  $x_1$  and  $x_2$

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

Same as above, but with class probabilities depending on  $z_1$  and  $z_2$

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

With robust standard errors

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

Constrain coefficients on  $x_1$  and  $x_2$  to be equal across classes

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

## Menu

Statistics > FMM (finite mixture models) > Beta regression

# Syntax

## Basic syntax

```
fm # : betareg depvar [indepvars] [ , options ]
```

## Full syntax

```
fm # [if] [in] [weight] [ , fmopts ] : betareg depvar [indepvars] [ , options ]
```

where # specifies the number of class models.

<i>options</i>	Description
<code>noconstant</code>	suppress the constant term
<code>link(<i>linkname</i>)</code>	specify link function for the conditional mean; default is <code>link(logit)</code>

*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.

<i>linkname</i>	Description
<code>logit</code>	logit
<code>probit</code>	probit
<code>cloglog</code>	complementary log-log

<i>fmmopts</i>	Description
<b>Model</b>	
<code>lcinvariant(<i>pclassname</i>)</code>	specify parameters that are equal across classes; default is <code>lcinvariant(none)</code>
<code>lcprob(<i>varlist</i>)</code>	specify independent variables for class probabilities
<code>lclabel(<i>name</i>)</code>	name of the categorical latent variable; default is <code>lclabel(Class)</code>
<code>lcbase(#)</code>	base latent class
<code>constraints(<i>constraints</i>)</code>	apply specified linear constraints
<b>SE/Robust</b>	
<code>vce(<i>vcetype</i>)</code>	<i>vcetype</i> may be <code>oim</code> , <code>opg</code> , <code>robust</code> , or <code>cluster <i>clustvar</i></code>
<b>Reporting</b>	
<code>level(#)</code>	set confidence level; default is <code>level(95)</code>
<code>nocnsreport</code>	do not display constraints
<code>noheader</code>	do not display header above parameter table
<code>nodvheader</code>	do not display dependent variables information in the header
<code>notable</code>	do not display parameter table
<code>display_options</code>	control columns and column formats, row spacing, line width, display of omitted variables and base and empty cells, and factor-variable labeling
<b>Maximization</b>	
<code>maximize_options</code>	control the maximization process
<code>startvalues(<i>svmethod</i>)</code>	method for obtaining starting values; default is <code>startvalues(factor)</code>
<code>emopts(<i>maxopts</i>)</code>	control EM algorithm for improved starting values
<code>noestimate</code>	do not fit the model; show starting values instead
<code>collinear</code>	keep collinear variables
<code>coeflegend</code>	display legend instead of statistics
<p><i>varlist</i> may contain factor variables; see [U] 11.4.3 <b>Factor variables</b>.</p> <p><code>by</code>, <code>collect</code>, <code>statsby</code>, and <code>svy</code> are allowed; see [U] 11.1.10 <b>Prefix commands</b>.</p> <p><code>vce()</code> and weights are not allowed with the <code>svy</code> prefix; see [SVY] <b>svy</b>.</p> <p><code>fweights</code>, <code>iweights</code>, and <code>pweights</code> are allowed; see [U] 11.1.6 <b>weight</b>.</p> <p><code>collinear</code> and <code>coeflegend</code> do not appear in the dialog box.</p> <p>See [U] 20 <b>Estimation and postestimation commands</b> for more capabilities of estimation commands.</p> <p>For a detailed description of <i>fmmopts</i>, see <i>Options</i> in [FMM] <b>fmm</b>.</p>	
<i>pclassname</i>	Description
<code>cons</code>	intercepts and cutpoints
<code>coef</code>	fixed coefficients
<code>errvar</code>	covariances of errors
<code>scale</code>	scaling parameters
<code>all</code>	all the above
<code>none</code>	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

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