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## Description

`fmm: tobit` fits mixtures of tobit regression models; see [\[FMM\] fmm](#) and [\[R\] tobit](#) for details.

## Quick start

Mixture of two tobit regression models of `y` on `x1` and `x2` where `y` is censored at the minimum of `y`

```
fmm 2: tobit y x1 x2, ll
```

Same as above, but where the lower-censoring limit is zero

```
fmm 2: tobit y x1 x2, ll(0)
```

Same as above, but where `lower` and `upper` are variables containing the censoring limits

```
fmm 2: tobit y x1 x2, ll(lower) ul(upper)
```

With class probabilities depending on `z1` and `z2`

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

With robust standard errors

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

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

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

## Menu

Statistics > FMM (finite mixture models) > Continuous outcomes > Tobit regression

# Syntax

## Basic syntax

```
fmm #: tobit depvar [indepvars] [, options]
```

## Full syntax

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

where # specifies the number of class models.

<i>options</i>	Description
<b>noconstant</b>	suppress the constant term
<b>ll</b> [ <i>(varname   #)</i> ]	left-censoring variable or limit
<b>ul</b> [ <i>(varname   #)</i> ]	right-censoring variable or limit
<b>offset</b> ( <i>varname</i> )	include <i>varname</i> in model with coefficient constrained to 1

Model

*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] tobit.

<i>fmopts</i>	Description
Model	
<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(<i>#</i>)</code>	base latent class
<code>constraints(<i>constraints</i>)</code>	apply specified linear constraints
SE/Robust	
<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>
Reporting	
<code>level(<i>#</i>)</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
Maximization	
<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 Factor variables.</p> <p><code>by</code>, <code>collect</code>, <code>statsby</code>, and <code>svy</code> are allowed; see [U] 11.1.10 Prefix commands.</p> <p><code>vce()</code> and weights are not allowed with the <code>svy</code> prefix; see [SVY] <code>svy</code>.</p> <p><code>fweights</code>, <code>iweights</code>, and <code>pweights</code> are allowed; see [U] 11.1.6 weight.</p> <p><code>collinear</code> and <code>coeflegend</code> do not appear in the dialog box.</p> <p>See [U] 20 Estimation and postestimation commands for more capabilities of estimation commands.</p> <p>For a detailed description of <i>fmopts</i>, see <i>Options</i> in [FMM] <i>fm</i>.</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 tobit regression, see [R] [tobit](#). 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](#).

## 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] [tobit](#) — Tobit regression

[SVY] [svy estimation](#) — Estimation commands for survey data

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