

**fmm: tobit** — Finite mixtures of tobit regression models

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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
```

As above, but where the lower-censoring limit is zero

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

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 |
|----------------|-------------|
|----------------|-------------|

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| Model                             |   |
|-----------------------------------|---|
| <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 |

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*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>fmmopts</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(#)</code>                       | base latent class   |
| <code>constraints(<i>constraints</i>)</code> | apply specified linear constraints  |
| <code>collinear</code>                       | keep collinear variables  |

## SE/Robust

`vce(vcetype)` *vcetype* may be `oim`, `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  
`coeflegend` display legend instead of statistics

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

`by`, `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.

`coeflegend` does 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`.

| <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] [Glossary](#)

[R] [tobit](#) — Tobit regression

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