

**fmm: ivregress** — Finite mixtures of linear regression models with endogenous covariates

[Description](#)[Remarks and examples](#)[Quick start](#)[Stored results](#)[Menu](#)[Methods and formulas](#)[Syntax](#)[Also see](#)

## Description

`fmm: ivregress` fits mixtures of linear regression models with endogenous covariates; see [\[FMM\] fmm](#) and [\[R\] ivregress](#) for details.

## Quick start

Mixture of two linear regressions of `y1` on `x1` with endogenous regressor `y2` that is instrumented by `w1`

```
fmm 2: ivregress y1 x1 (y2 = w1)
```

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

```
fmm 2, lcpob(z1 z2): ivregress y1 x1 (y2 = w1)
```

With robust standard errors

```
fmm 2, vce(robust): ivregress y1 x1 (y2 = w1)
```

Constrain coefficients on `x1`, `w1`, and `y2` to be equal across classes

```
fmm 2, lcinvariant(coef): ivregress y1 x1 (y2 = w1)
```

## Menu

Statistics > FMM (finite mixture models) > Continuous outcomes > Linear regression with endogenous covariates

## Syntax

### Basic syntax

```
fmm # : ivregress depvar [varlist1] (varlist2 = varlist_iv) [, options]
```

### Full syntax

```
fmm # [if] [in] [weight] [, fmmopts]:  
      ivregress depvar [varlist1] (varlist2 = varlist_iv) [, options]
```

where # specifies the number of class models.

<i>options</i>	Description
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#### Model

<b><u>noconstant</u></b>	suppress the constant term
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*varlist*<sub>1</sub> and *varlist\_iv* may contain factor variables; see [U] 11.4.3 **Factor variables**.

*depvar*, *varlist*<sub>1</sub>, and *varlist\_iv* may contain time-series operators; see [U] 11.4.4 **Time-series varlists**.

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

<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	
<code>vce(<i>vcetype</i>)</code>	<i>vcetype</i> may be <code>oim</code> , <code>robust</code> , or <code>cluster <i>clustvar</i></code>
Reporting	
<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
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>coeflegend</code>	display legend instead of statistics
<p><i>varlist</i> may contain factor variables; see [U] 11.4.3 Factor variables.</p> <p>by, statsby, and svy are allowed; see [U] 11.1.10 Prefix commands.</p> <p>vce() and weights are not allowed with the svy prefix; see [SVY] svy.</p> <p>fweights, iweights, and pweights are allowed; see [U] 11.1.6 weight.</p> <p>coeflegend does 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>fmmopts</i>, see <i>Options</i> in [FMM] fmm.</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

[stata.com](#)

For a general introduction to finite mixture models, see [\[FMM\] fmm intro](#). For general information about linear regression with endogenous covariates, see [\[R\] ivregress](#). 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](#)

[\[R\] ivregress](#) — Single-equation instrumental-variables regression

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