

**graph twoway fptest** — Twoway fractional-polynomial prediction plots

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## Description

`twoway fptest` calculates the prediction for *yvar* from estimation of a fractional polynomial of *xvar* and plots the resulting curve.

## Quick start

Fractional-polynomial prediction plot of predicted *y* on *x* using `regress`

```
twoway fptest y x
```

As above, but estimate a fractional polynomial of degree 4

```
twoway fptest y x, estopts(degree(4))
```

Overlaid on a scatterplot of the observed values

```
twoway scatter y x || fptest y x
```

As above, with lines for fractional polynomials of degrees 2 (default) and 4

```
twoway scatter y x || fptest y x || fptest y x, estopts(degree(4))
```

A separate graph area for each level of `catvar`

```
twoway scatter y x || fptest y x, by(catvar)
```

As above, but with an additional graph area for all levels of `catvar` combined

```
twoway scatter y x || fptest y x, by(catvar, total)
```

Overlay lines and data points for `catvar==0` and `catvar==1` in a single graph area

```
twoway scatter y x if catvar==0 || scatter y x if catvar==1 || ///
    fptest y x if catvar==0 || fptest y x if catvar==1
```

Specify `poisson` as the estimation command

```
twoway scatter y x || fptest y x, estcmd(poisson)
```

## Menu

Graphics > Twoway graph (scatter, line, etc.)

## Syntax

```
twoway ffit yvar xvar [if] [in] [weight] [, options]
```

<i>options</i>	Description
<code>estcmd(<i>est_cmd</i>)</code>	estimation command; default is <code>regress</code>
<code>estopts(<i>est_opts</i>)</code>	specifies <i>est_opts</i> to estimate the fractional polynomial regression
<code>cline_options</code>	change look of predicted line
<code>axis_choice_options</code>	associate plot with alternative axis
<code>twoway_options</code>	titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.

*est\_cmd* may be `cllogit`, `glm`, `intreg`, `logistic`, `logit`, `mlogit`, `nbreg`, `ologit`, `oprobit`, `poisson`, `probit`, `regress`, `rreg`, `stcox`, `stcrreg`, `streg`, or `xtgee`.

See [G-3] `cline_options`, [G-3] `axis_choice_options`, and [G-3] `twoway_options`.

Options `estcmd()` and `estopts()` are *unique*; see [G-4] **concept: repeated options**.

`aweight`s, `fweight`s, and `pweight`s are allowed. Weights, if specified, affect estimation but not how the weighted results are plotted. See [U] **11.1.6 weight**.

<i>est_opts</i>	Description
<code>degree(#)</code>	degree of fractional polynomial to fit; default is <code>degree(2)</code>
<code>noscaling</code>	suppress scaling of first independent variable
<code>noconstant</code>	suppress constant term
<code>powers(<i>numlist</i>)</code>	list of fractional polynomial powers from which models are chosen
<code>center(<i>cent_list</i>)</code>	specification of centering for the independent variables
<code>all</code>	include out-of-sample observations in generated variables
<code>log</code>	display iteration log
<code>compare</code>	compare models by degree
<code>display_options</code>	control column formats and line width
<code>other_est_opts</code>	other options allowed by <i>est_cmd</i>

*cent\_list* is a comma-separated list with elements *varlist*:{*mean* | # | *no*}, except that the first element may optionally be of the form {*mean* | # | *no*} to specify the default for all variables.

## Options

`estcmd(est_cmd)` specifies the estimation command to be used; `estcmd(regress)` is the default.

`estopts(est_opts)` specifies the options to estimate the fractional polynomial regression from which the curve will be predicted. Available *est\_opts* are

`degree(#)` determines the degree of FP to be fit. The default is `degree(2)`, that is, a model with two power terms.

`noscaling` suppresses scaling of  $xvar_1$  and its powers.

`noconstant` suppresses the regression constant if this is permitted by `est_cmd`.

`powers(numlist)` is the set of FP powers from which models are to be chosen. The default is `powers(-2,-1,-.5,0,.5,1,2,3)` (0 means log).

`center(cent_list)` defines the centering for the covariates  $xvar_1$ ,  $xvar_2$ , ...,  $xvarlist$ . The default is `center(mean)`. A typical item in `cent_list` is `varlist:{mean|#|no}`. Items are separated by commas. The first item is special because `varlist`: is optional, and if omitted, the default is (re)set to the specified value (mean or # or no). For example, `center(no, age:mean)` sets the default to no and sets the centering for age to mean.

`all` includes out-of-sample observations when generating the best-fitting FP powers of  $xvar_1$ ,  $xvar_2$ , etc. By default, the generated FP variables contain missing values outside the estimation sample.

`log` displays deviances and (for `regress`) residual standard deviations for each FP model fit.

`compare` reports a closed-test comparison between FP models.

`display_options`: `cformat(%fmt)`, `pformat(%fmt)`, `sformat(%fmt)`, and `no1stretch`; see [R] [estimation options](#).

`other_est_opts` are options appropriate to the `est_cmd`; see the documentation for that `est_cmd`. For example, for `stcox`, `other_est_opts` may include `efron` or some alternate method for handling tied failures.

`cline_options` specify how the prediction line is rendered; see [G-3] [cline\\_options](#).

`axis_choice_options` associate the plot with a particular  $y$  or  $x$  axis on the graph; see [G-3] [axis\\_choice\\_options](#).

`twoway_options` are a set of common options supported by all `twoway` graphs. These options allow you to title graphs, name graphs, control axes and legends, add lines and text, set aspect ratios, create graphs over by() groups, and change some advanced settings. See [G-3] [twoway\\_options](#).

## Remarks and examples

[stata.com](http://stata.com)

Remarks are presented under the following headings:

*Typical use*

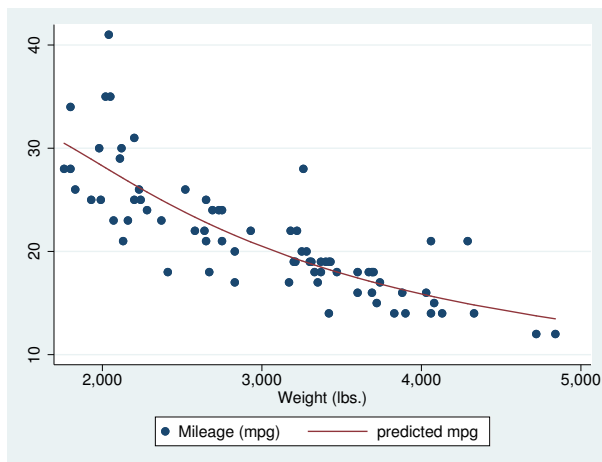
*Cautions*

*Use with by()*

## Typical use

`twoway fptest` is nearly always used in conjunction with other `twoway` plottypes, such as

```
. use http://www.stata-press.com/data/r15/auto
(1978 Automobile Data)
. scatter mpg weight || fptest mpg weight
```



## Cautions

Do not use `twoway fptest` when specifying the `axis_scale_options` `yscale(log)` or `xscale(log)` to create log scales. Typing

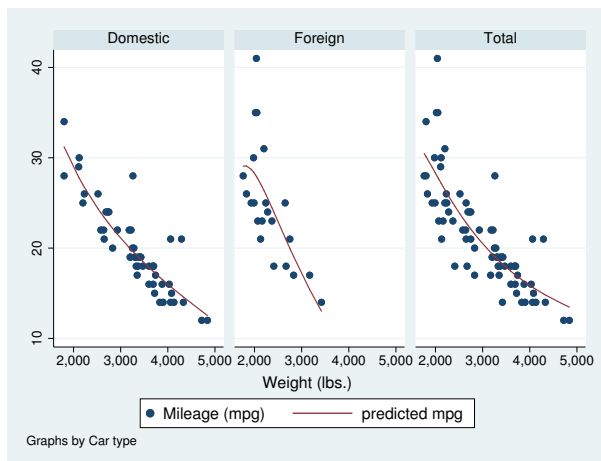
```
. scatter mpg weight, xscale(log) || fptest mpg weight
```

will produce a curve that will be fit from a fractional polynomial regression of `mpg` on `weight` rather than `log(weight)`.

## Use with by()

fpfit may be used with by() (as can all the twoway plot commands):

```
. scatter mpg weight || fpfit mpg weight ||, by(foreign, total row(1))
```



## Also see

[G-2] [graph twoway line](#) — Twoway line plots

[G-2] [graph twoway fpfitci](#) — Twoway fractional-polynomial prediction plots with CIs

[G-2] [graph twoway lfit](#) — Twoway linear prediction plots

[G-2] [graph twoway qfit](#) — Twoway quadratic prediction plots

[G-2] [graph twoway mband](#) — Twoway median-band plots

[G-2] [graph twoway mspline](#) — Twoway median-spline plots