### Syntax

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

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

`est_cmd` may be `clogit, glm, intreg, logistic, logit, mlogit, nbreg, ologit, oprobit, poisson, probit, regress, rreg, stcox, stcrreg, streg`, or `xtgee`.


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

`aweights, fweights, and pweights` are allowed. Weights, if specified, affect estimation but not how the weighted results are plotted. See [U] 11.1.6 `weight`.

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

`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.
Menu

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

Description
twoway fpfit calculates the prediction for yvar from estimation of a fractional polynomial of xvar and plots the resulting curve.

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 and its powers.
nocconstant 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 xvar1, xvar2, ..., 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 xvar1, xvar2, 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 nolstretch; 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

Remarks are presented under the following headings:

- Typical use
- Cautions
- Use with by()

Typical use

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

```
. use http://www.stata-press.com/data/r13/auto
(1978 Automobile Data)
. scatter mpg weight || fpfit mpg weight
```

Cautions

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

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

will produce a curve that will be fit from a fractional polynomial regression of mpg on weight rather than log(weight).
fpfit may be used with by() (as can all the twoway plot commands):

\[ . \text{scatter mpg weight || fpfit mpg weight ||, by(foreign, total row(1))} \]