**graph twoway qfit — Twoway quadratic prediction plots**

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<td><em>twoway qfit</em> calculates the prediction for <em>yvar</em> from a linear regression of <em>yvar</em> on <em>xvar</em> and <em>xvar</em>(^2) and plots the resulting curve.</td>
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**Quick start**

Graph showing the quadratic prediction of *y* using *x* and *x*\(^2\)

```
twoway qfit y x
```

Overlay quadratic prediction graph on a scatterplot of the observed data

```
twoway scatter y x || qfit y x
```

As above, but with a separate graph area for each level of *catvar*

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

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

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

As above, but with all graphs in a single row

```
twoway scatter y x || qfit y x, by(catvar, total row(1))
```

**Menu**

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

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

<table>
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<th>options</th>
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<td><code>range(# #)</code></td>
<td>range over which predictions calculated</td>
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<td><code>n(#)</code></td>
<td>number of prediction points</td>
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<td><code>atobs</code></td>
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<td><code>cline_options</code></td>
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<tr>
<td><code>axis_choice_options</code></td>
<td>associate plot with alternative axis</td>
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<tr>
<td><code>twoway_options</code></td>
<td>titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.</td>
</tr>
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</table>

All options are rightmost; see [G-4] Concept: repeated options.

`yvar` and `xvar` may contain time-series operators; see [U] 11.4.4 Time-series varlists.

`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.

Options

- `range(# #)` specifies the `x` range over which predictions are calculated. The default is `range(. .)`, meaning the minimum and maximum values of `xvar`. `range(0 10)` would make the range 0 to 10, `range(. 10)` would make the range the minimum to 10, and `range(0 .)` would make the range 0 to the maximum.
- `n(#)` specifies the number of points at which predictions over `range()` are to be calculated. The default is `n(100)`.
- `atobs` is an alternative to `n()`. It specifies that the predictions be calculated at the `xvar` values. `atobs` is the default if `predopts()` is specified and any statistic other than `xb` is requested.
- `estopts(regress_options)` specifies options to be passed along to `regress` to estimate the linear regression from which the curve will be predicted; see [R] `regress`. If this option is specified, commonly specified is `estopts(nocons)`.
- `predopts(predict_options)` specifies options to be passed along to `predict` to obtain the predictions after estimation by `regress`; see [R] `regress postestimation`.
- `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 qfit is nearly always used in conjunction with other twoway plottypes, such as

```
use https://www.stata-press.com/data/r16/auto
(1978 Automobile Data)
scatter mpg weight || qfit mpg weight
```

![Graph showing quadratic fit](image)

Results are visually the same as typing

```
generate tempvar = weight^2
generate tempvar = weight^2
regress mpg weight tempvar
predict fitted
scatter mpg weight || line fitted weight
```

Cautions

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

```
scatter mpg weight, xscale(log) || qfit mpg weight
```

produces something that is not a parabola because the regression estimated for the prediction was for `mpg` on `weight` and `weight^2`, not `mpg` on `log(weight)` and `log(weight)^2`. 
Use with by()

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

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

![Graphs by Car type](image)

Also see

[G-2] `graph twoway fpfit` — Twoway fractional-polynomial prediction plots

[G-2] `graph twoway lfit` — Twoway linear prediction plots

[G-2] `graph twoway line` — Twoway line plots

[G-2] `graph twoway mband` — Twoway median-band plots

[G-2] `graph twoway mspline` — Twoway median-spline plots

[G-2] `graph twoway qfitci` — Twoway quadratic prediction plots with CIs

[R] `regress` — Linear regression