**tsline — Time-series line plots**

**Description**

*tsline* draws line plots for time-series data.

*tsrline* draws a range plot with lines for time-series data.

**Quick start**

Line plot for the time series *y1* using *tsset* data

```
   tsline y1
```

Add plots of time series *y2* and *y3*

```
   tsline y1 y2 y3
```

Range plot with lines for the lower and upper values of time series *y1* stored in *y1_lower* and *y1_upper*, respectively

```
   tsrline y1_lower y1_upper
```

Overlay a range plot of the lower and upper values of time series *y1* stored in *y1_lower* and *y1_upper*, respectively, on a plot of *y1*

```
   tsline y1 || tsrline y1_lower y1_upper
```

**Menu**

Statistics > Time series > Graphs > Line plots
Syntax

**Time-series line plot**

```
[ twoway] tsline varlist [if] [in] [, tslines_options]
```

**Time-series range plot with lines**

```
[ twoway] tsrline y1 y2 [if] [in] [, tsrline_options]
```

where the time variable is assumed set by `tsset` (see [TS] `tsset`), `varlist` has the interpretation $y_1, y_2, \ldots, y_k$.

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<thead>
<tr>
<th><strong>tsline_options</strong></th>
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<tbody>
<tr>
<td><strong>Plots</strong></td>
<td></td>
</tr>
<tr>
<td><strong>scatter_options</strong></td>
<td>any options documented in [G-2] <code>graph twoway scatter</code> with the exception of <code>marker_options</code>, <code>marker_placement_options</code>, and <code>marker_label_options</code>, which will be ignored if specified</td>
</tr>
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<td><strong>Y axis, Time axis, Titles, Legend, Overall, By</strong></td>
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Options

**Plots**

- **scatter_options** are any of the options allowed by the `graph twoway scatter` command except that `marker_options`, `marker_placement_option`, and `marker_label_options` will be ignored if specified; see [G-2] `graph twoway scatter`.

- **rline_options** are any of the options allowed by the `graph twoway rline` command; see [G-2] `graph twoway rline`.

**Y axis, Time axis, Titles, Legend, Overall, By**

- **twoway_options** are any of the options documented in [G-3] `twoway_options`. These include options for titling the graph (see [G-3] `title_options`), options for saving the graph to disk (see [G-3] `saving_option`), and the `by()` option, which will allow you to simultaneously plot different subsets of the data (see [G-3] `by_option`).

  Also see the `recast()` option discussed in [G-3] `advanced_options` for information on how to plot spikes, bars, etc., instead of lines.
Remarks and examples

Remarks are presented under the following headings:

- Basic examples
- Advanced example
- Video example

Basic examples

Example 1: A time-series line plot

We simulated two separate time series (each of 200 observations) and placed them in a Stata dataset, `tsline1.dta`. The first series simulates an AR(2) process with $\phi_1 = 0.8$ and $\phi_2 = 0.2$; the second series simulates an MA(2) process with $\theta_1 = 0.8$ and $\theta_2 = 0.2$. We use `tsline` to graph these two series.

```
. use https://www.stata-press.com/data/r16/tsline1
. tsset lags
  time variable:  lags, 0 to 199
  delta: 1 unit
. tsline ar ma
```

Example 2: Using options to highlight information

Suppose that we kept a calorie log for an entire calendar year. At the end of the year, we would have a dataset (for example, `tsline2.dta`) that contains the number of calories consumed for 365 days. We could then use `tsset` to identify the date variable and `tsline` to plot calories versus time. Knowing that we tend to eat a little more food on Thanksgiving and Christmas day, we use the `ttick()` and `ttext()` options to point out these days on the time axis.
. use https://www.stata-press.com/data/r16/tsline2
. tsset day
time variable:  day,  01jan2002 to 31dec2002
delta:   1 day
. tsline calories, ttick(28nov2002  25dec2002, tpos(in))
>  ttext(3470  28nov2002 "thanks"  3470  25dec2002 "x-mas", orient(vert))

Options associated with the time axis allow dates (and times) to be specified in place of numeric
date (and time) values. For instance, we used

    ttick(28nov2002  25dec2002, tpos(in))

to place tick marks at the specified dates. This works similarly for tlabel(), tmlabel(), and
 tmtick().

Suppose that we wanted to place vertical lines for the previously mentioned holidays. We could
specify the dates in the tline() option as follows:

    . tsline calories, tline(28nov2002  25dec2002)
Example 3: Formatting the time axis

We could also modify the format of the time axis so that the labeled ticks display only the day in the year:

```
.tsline calories, tlabel(, format(%tdmd)) ttitle("Date (2002)"
```

Advanced example

tsline and tsrline are both commands and plottypes as defined in [G-2] graph twoway. Thus the syntax for tsline is

```
.graph twoway tsline ... 
.twoway tsline ... 
.tsline ...
```

and similarly for tsrline. Being plot types, these commands may be combined with other plot types in the twoway family, as in,

```
.twoway (tsrline ...) (tsline ...) (lfit ...) ...
```

which can equivalently be written as

```
.tsrline ... || tsline ... || lfit ... || ...
```
Example 4: Combining line and range plots

In the first plot of example 2, we were uncertain of the exact values we logged, so we also gave a range for each day. Here is a plot of the summer months.

```
.tsline lcalories ucalories if tin(1may2002,31aug2002) || tsline calories || > if tin(1may2002,31aug2002), ytitle(Calories)
```

Video example

Line graphs and tin()

References


Also see

[TS] *tsset* — Declare data to be time-series data

[G-2] *graph twoway* — Twoway graphs

[XT] *xtline* — Panel-data line plots