tsline — Plot time-series data

**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 \( y_1 \) using `tsset` data

```
tsline y1
```

Add plots of time series \( y_2 \) and \( y_3 \)

```
tsline y1 y2 y3
```

Range plot with lines for the lower and upper values of time series \( y_1 \) stored in \( y1\_lower \) and \( y1\_upper \), respectively

```
hsrline y1\_lower y1\_upper
```

Overlay a range plot of the lower and upper values of time series \( y_1 \) stored in \( y1\_lower \) and \( y1\_upper \), respectively, on a plot of \( y_1 \)

```
tsline y1 || tsrline y1\_lower y1\_upper
```

**Menu**

Statistics > Time series > Graphs > Line plots
Syntax

Time-series line plot

\[ \texttt{twoway \ tsline} \ \texttt{varlist \ [if] \ [in] \ [, \ tsline\_options]} \]

Time-series range plot with lines

\[ \texttt{twoway \ tsrline} \ y_1 \ y_2 \ [if] \ [in] \ [, \ tsrline\_options]} \]

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

\begin{tabular}{ll}
\hline
tsline\_options & Description \hline
scatter\_options & any options documented in \texttt{[G-2 graph twoway scatter}} with\hline
 & the exception of \texttt{marker\_options, marker\_placement\_options},\hline
 & and \texttt{marker\_label\_options}, which will be ignored if specified\hline
\end{tabular}

\begin{tabular}{ll}
\hline
tsrline\_options & Description \hline
rline\_options & any options documented in \texttt{[G-2 graph twoway rline}} \hline
\end{tabular}

Options

\begin{tabular}{ll}
\hline
Plots & \hline
scatter\_options & any of the options allowed by \texttt{graph twoway scatter} except that\hline
 & \texttt{marker\_options, marker\_placement\_option, and marker\_label\_options} will be ignored if specified;\hline
 & see \texttt{[G-2 graph twoway scatter]}\hline
rline\_options & any of the options allowed by \texttt{graph twoway rline}; see \texttt{[G-2 graph twoway rline}} \hline
\end{tabular}

\begin{tabular}{ll}
\hline
Y axis, Time axis, Titles, Legend, Overall, By & \hline
twoway\_options & any of the options documented in \texttt{[G-3 twoway options}} \hline
\end{tabular}

Also see the \texttt{recast()} option discussed in \texttt{[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.

```stata
. use http://www.stata-press.com/data/r14/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 http://www.stata-press.com/data/r14/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

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

```
.graph twoway tline ... 
.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 ...) (tline ...) (lfit ...) ... 
```

which can equivalently be written as

```
.tsrline ... || tline ... || 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.

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

Calorie range Calories consumed

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Video example

Time series, part 2: 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