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Stata tip 93: Handling multiple y axes on twoway graphs

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Sometimes users find it difficult to handle multiple *y* axes on their `twoway` graphs. The main issue is controlling the side of the graph—left or right—where each axis is placed.

Here is a contrived example that exhibits the issue:

```
. sysuse auto  
(1978 Automobile Data)  
. collapse (mean) mpg trunk, by(length foreign)  
. twoway bar    mpg length, yaxis(2) ||  
      line trunk length, yaxis(1)
```

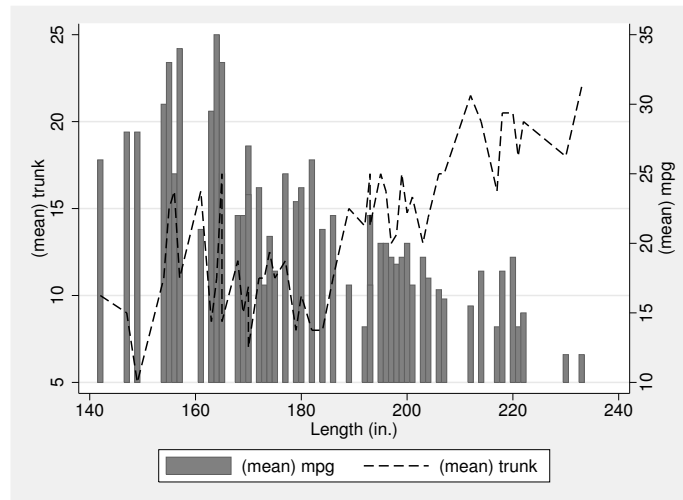


We might want `yaxis(1)` to be on the left of the graph and `yaxis(2)` to be on the right of the graph, but `twoway` insists on putting `yaxis(2)` on the left and `yaxis(1)` on the right. We could achieve what we want by reversing the order of the two plots, but the bars then occlude the lines, and who wants that?

It might be surprising, but the number assigned to an axis has nothing to do with its placement on the graph. `twoway` places the axes in the order in which it encounters them, with no consideration of their assigned number. How authoritarian! Consider `twoway`'s problem: when it sees `yaxis(2)`, it cannot be sure that it will ever see a `yaxis(1)`. Moreover, `twoway` will let you create more than two *y* axes, and in that case it just stacks them up on the left of the graph like cordwood.

Do not worry. Although we may not like `twoway`'s rules, we can alter them. If we want any axes to appear in a different position, we just tell `twoway` to move them to the alternate (other) side of the graph using the `yscale(alt)` option. In this example, if we do not like the position of either y axis, we will need to tell each of them to switch to the other side.

```
. twoway bar mpg length, yaxis(2) ||
   line trunk length, yaxis(1) yscale(alt) yscale(alt axis(2))
```



We typed just `yscale(alt)` rather than the more explicit (but still valid) `yscale(alt axis(1))` because `axis(1)` is the default whenever we do not specify an axis. To alter the side where `axis(2)` appears, we had to be explicit about the axis number and type `yscale(alt axis(2))`.

If your axis is not where you want it, tell it to `alter` itself.¹

1 Acknowledgment

I would like to thank *Stata Journal* editor Nicholas Cox for the initial adaptation of this tip from a Statalist posting, though Nick bears no responsibility for any remaining errors or puns.

1. The *Stata Journal* editors, against much stiff opposition, declare this to be the worst pun so far in the history of the *Stata Journal*.