fvrevar — Factor-variables operator programming command

Description

fvrevar creates a variable list that includes equivalent, temporary variables in place of the factor variables, interactions, or time-series–operated variables in varlist. The resulting variable list can be used by commands that do not otherwise support factor variables or time-series–operated variables. The resulting list also could be used in a program to speed execution at the cost of using more memory.

Quick start

Create temporary indicator variables for the levels of categorical variable a and store names in r(varlist)

```
fvrevar i.a
```

Create temporary variables corresponding to the levels of a, b, and their interaction

```
fvrevar i.a##i.b
```

As above, and create a temporary variable for the lag of x using tsset data

```
fvrevar i.a##i.b L.x
```

Return the list of unoperated variables (a, b, and x) in r(varlist)

```
fvrevar i.a##i.b L.x, list
```

Create new variables a_1, a_2, ..., corresponding to the levels of a

```
fvrevar i.a, stub(a_)
```

Create new variables ab_1, ab_2, ..., corresponding to the levels of the interaction between a and b

```
fvrevar i.a#i.b, stub(ab_)
```
Syntax

\[
\texttt{fvrevar} \ [\texttt{varlist}] \ [\texttt{if}] \ [\texttt{in}] \ [, \texttt{substitute ts} \texttt{only list} \texttt{stub(stub)}] \\
\]

You must \texttt{tsset} your data before using \texttt{fvrevar} if \texttt{varlist} contains time-series operators; see \[TS\] \texttt{tsset}.

Options

\texttt{substitute} specifies that equivalent, temporary variables be substituted for any factor variables, interactions, or time-series–operated variables in \texttt{varlist}. \texttt{substitute} is the default action taken by \texttt{fvrevar}; you do not need to specify the option.

\texttt{tsonly} specifies that equivalent, temporary variables be substituted for only the time-series–operated variables in \texttt{varlist}.

\texttt{list} specifies that all factor-variable operators and time-series operators be removed from \texttt{varlist} and the resulting list of base variables be returned in \texttt{r(varlist)}. No new variables are created with this option.

\texttt{stub(stub)} specifies that \texttt{fvrevar} generate named variables instead of temporary variables. The new variables will be named \texttt{stub#}.

Remarks and examples

\texttt{fvrevar} might create no new variables, one new variable, or many new variables, depending on the number of factor variables, interactions, and time-series operators appearing in \texttt{varlist}. Any new variables created are temporary. The new, equivalent \texttt{varlist} is returned in \texttt{r(varlist)}. The new \texttt{varlist} corresponds one to one with the original \texttt{varlist}.

**Example 1**

Typing

```plaintext
. use https://www.stata-press.com/data/r16/auto2
. fvrevar i.rep78 mpg turn
```

creates five temporary variables corresponding to the levels of \texttt{rep78}. No new variables are created for variables \texttt{mpg} and \texttt{turn} because they do not contain factor-variable or time-series operators.

The resulting variable list is

```plaintext
. display "r(varlist)"
__000000 __000001 __000002 __000003 __000004  mpg turn
```

(Your temporary variable names may be different, but that is of no consequence.)

Temporary variables automatically vanish when the program concludes.

**Example 2**

Suppose we want to create temporary variables for specific levels of a factor variable. To do this, we can use the parenthesis notation of factor-variable syntax.

```plaintext
. fvrevar i(2,3)bn.rep78 mpg
```
creates two temporary variables corresponding to levels 2 and 3 of rep78. Notice that we specified that neither level 2 nor 3 be set as the base level by using the bn notation. If we did not specify bn, level 2 would have been treated as the base level.

The resulting variable list is

```
. display "'r(varlist)'"
__000005 __000002 mpg
```

We can see the results by listing the new variables alongside the original value of rep78.

```
. list rep78 'r(varlist)' in 1/5

<table>
<thead>
<tr>
<th>rep78</th>
<th>__000005</th>
<th>__000002</th>
<th>mpg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Average</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Average</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td>.</td>
</tr>
<tr>
<td>4.</td>
<td>Average</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Good</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
```

If we had needed only the base-variable names, we could have specified

```
. fvrevar i(2,3)bn.rep78 mpg, list
. display "'r(varlist)'"
mpg rep78
```

The order of the list will probably differ from that of the original list; base variables are listed only once.

### Example 3

Now let's assume we have a `varlist` containing both an interaction and time-series–operated variables. If we want to create temporary variables for the entire equivalent `varlist`, we can specify `fvrevar` with no options.

```
. generate t = _n
. tsset t
  time variable:  t, 1 to 74
  delta:  1 unit
. fvrevar c.turn#i(2,3).rep78 L.mpg
```

The resulting variable list is

```
. display "'r(varlist)'"
__000006 __000007 __000008
```

If we want to create temporary variables only for the time-series–operated variables, we can specify the `tsonly` option.

```
. fvrevar c.turn#i(2,3).rep78 L.mpg, tsonly
```
The resulting variable list is

```
2. display "'r(varlist)'"
3. rep78#c.turn rep78#c.turn __000008
```

Notice that `fvrevar` returned the expanded factor-variable list with the `tsonly` option.

**Technical note**

`fvrevar`, `substitute` avoids creating duplicate variables. Consider

```
. fvrevar i.rep78 turn mpg i.rep78
```

`i.rep78` appears twice in the varlist. `fvrevar` will create only one set of new variables for the five levels of `rep78` and will use these new variables once in the resulting `r(varlist)`. Moreover, `fvrevar` will do this even across multiple calls:

```
. fvrevar i.rep78 turn mpg
. fvrevar i.rep78
```

`i.rep78` appears in two separate calls. At the first call, `fvrevar` creates five temporary variables corresponding to the five levels of `rep78`. At the second call, `fvrevar` remembers what it has done and uses the same temporary variables for `i.rep78`.

**Stored results**

`fvrevar` stores the following in `r()`:

- **Macros**
  - `r(varlist)` the modified variable list or list of base-variable names

**Also see**

- [TS] `tsrevar` — Time-series operator programming command
- [P] `fvexpand` — Expand factor varlists
- [P] `syntax` — Parse Stata syntax
- [P] `unab` — Unabbreviate variable list
- [U] 11 Language syntax
- [U] 11.4.4 Time-series varlists
- [U] 18 Programming Stata