

**varbasic** — Fit a simple VAR and graph IRFs or FEVDs

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## Description

`varbasic` fits a basic vector autoregressive (VAR) model and graphs the impulse–response functions (IRFs), the orthogonalized impulse–response functions (OIRFs), or the forecast-error variance decompositions (FEVDs).

## Quick start

Fit vector autoregressive model for dependent variables `y1`, `y2`, and `y3` and their first and second lags, and graph orthogonalized impulse responses using `tsset` data

```
varbasic y1 y2 y3
```

Same as above, but include second and third lags instead of first and second lags

```
var y1 y2 y3, lags(2 3)
```

Same as above, but produce forecast-error variance decompositions instead of impulse responses

```
var y1 y2 y3, lags(2 3) fevd
```

Same as above, but set the forecast horizon for the forecast-error variance decompositions to be 12 periods

```
var y1 y2 y3, lags(2 3) fevd step(12)
```

## Menu

Statistics > Multivariate time series > Basic VAR

## Syntax

```
varbasic depvarlist [if] [in] [, options]
```

<i>options</i>	Description
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### Main

`lags(numlist)` use lags *numlist* in the model; default is `lags(1 2)`

`irf` produce matrix graph of IRFs

`fevd` produce matrix graph of FEVDs

`nograph` do not produce a graph

`step(#)` set forecast horizon *#* for estimating the OIRFs, IRFs, and FEVDs; default is `step(8)`

You must `tsset` your data before using `varbasic`; see [TS] `tsset`.

*depvarlist* may contain time-series operators; see [U] 11.4.4 Time-series varlists.

`collect`, `rolling`, `statsby`, and `xi` are allowed; see [U] 11.1.10 Prefix commands.

See [U] 20 Estimation and postestimation commands for more capabilities of estimation commands.

## Options

Main

`lags(numlist)` specifies the lags to be included in the model. The default is `lags(1 2)`. This option takes a numlist and not simply an integer for the maximum lag. For instance, `lags(2)` would include only the second lag in the model, whereas `lags(1/2)` would include both the first and second lags in the model. See [U] 11.1.8 [numlist](#) and [U] 11.4.4 [Time-series varlists](#) for more discussion of numlists and lags.

`irf` causes `varbasic` to produce a matrix graph of the IRFs instead of a matrix graph of the OIRFs, which is produced by default.

`fevd` causes `varbasic` to produce a matrix graph of the FEVDs instead of a matrix graph of the OIRFs, which is produced by default.

`nograph` specifies that no graph be produced. The IRFs, OIRFs, and FEVDs are still estimated and saved in the IRF file `_varbasic.irf`.

`step(#)` specifies the forecast horizon for estimating the IRFs, OIRFs, and FEVDs. The default is eight periods.

## Remarks and examples

[stata.com](https://www.stata.com)

`varbasic` simplifies fitting simple VAR models and graphing the IRFs, the OIRFs, or the FEVDs. See [TS] [var](#) and [TS] [var svar](#) for fitting more advanced VAR models and structural vector autoregressive (SVAR) models. All the postestimation commands discussed in [TS] [var postestimation](#) work after `varbasic`.

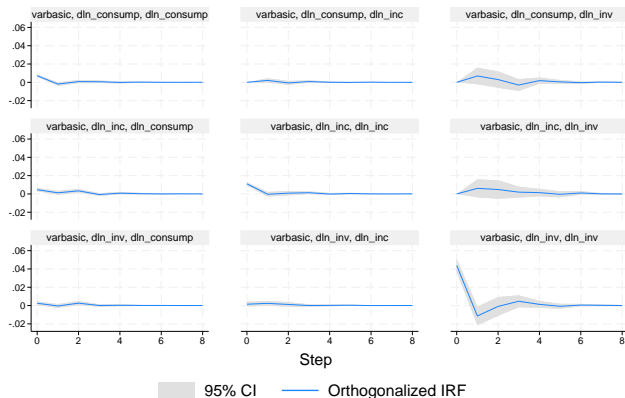
This entry does not discuss the methods for fitting a VAR model or the methods surrounding the IRFs, OIRFs, and FEVDs. See [TS] [var](#) and [TS] [irf create](#) for more on these methods. This entry illustrates how to use `varbasic` to easily obtain results. It also illustrates how `varbasic` serves as an entry point to further analysis.

### ► Example 1

We fit a three-variable VAR model with two lags to the German macro data used by [Lütkepohl \(2005\)](#). The three variables are the first difference of natural log of investment, `dln_inv`; the first difference of the natural log of income, `dln_inc`; and the first difference of the natural log of consumption, `dln_consump`. In addition to fitting the VAR model, we want to see the OIRFs. Below we use `varbasic` to fit a VAR(2) model on the data from the second quarter of 1961 through the fourth quarter of 1978. By default, `varbasic` produces graphs of the OIRFs.

```
. use https://www.stata-press.com/data/r18/lutkepohl2
(Quarterly SA West German macro data, Bil DM, from Lutkepohl 1993 Table E.1)
```

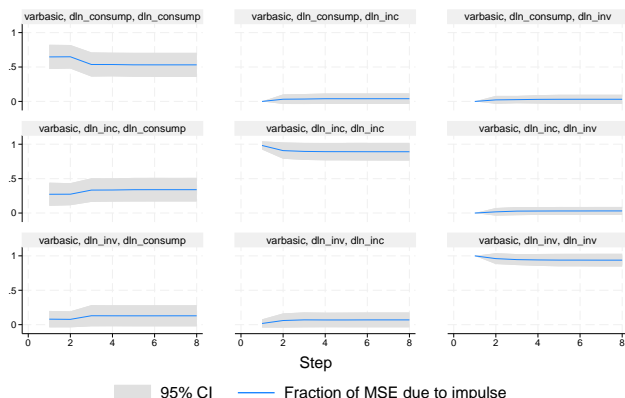




Graphs by irfname, impulse variable, and response variable

Because we are also interested in looking at the FEVDs, we can use `irf graph` to obtain the graphs. Although the details are available in [TS] [irf](#) and [TS] [irf graph](#), the command below produces what we want after the call to `varbasic`.

```
. irf graph fevd, lstep(1)
```



Graphs by irfname, impulse variable, and response variable

### □ Technical note

Stata stores the estimated IRFs, OIRFs, and FEVDs in an IRF file called `_varbasic.irf` in the current working directory. `varbasic` replaces any `_varbasic.irf` that already exists. Finally, `varbasic` makes `_varbasic.irf` the active IRF file. This means that the `graph` and `table` commands `irf graph`, `irf cgraph`, `irf ograph`, `irf table`, and `irf ctable` will all display results that correspond to the VAR model fit by `varbasic`.



## Stored results

See *Stored results* in [TS] [var](#).

## Methods and formulas

varbasic uses [var](#) and [irf graph](#) to obtain its results. See [TS] [var](#) and [TS] [irf graph](#) for a discussion of how those commands obtain their results.

## References

- Lütkepohl, H. 1993. *Introduction to Multiple Time Series Analysis*. 2nd ed. New York: Springer.  
 ——. 2005. *New Introduction to Multiple Time Series Analysis*. New York: Springer.

## Also see

- [TS] [varbasic postestimation](#) — Postestimation tools for varbasic  
 [TS] [tsset](#) — Declare data to be time-series data  
 [TS] [var](#) — Vector autoregressive models<sup>+</sup>  
 [TS] [var intro](#) — Introduction to vector autoregressive models  
 [TS] [var ivsvar](#) — Instrumental-variables structural vector autoregressive models<sup>+</sup>  
 [TS] [var svar](#) — Structural vector autoregressive models  
 [U] [20 Estimation and postestimation commands](#)

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