

varbasic — Fit a simple VAR and graph IRFs or FEVDs

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Syntax

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

options

Description

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](#).

`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.

Menu

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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).

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](http://www.stata.com)

`varbasic` simplifies fitting simple VARs 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 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 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, 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.

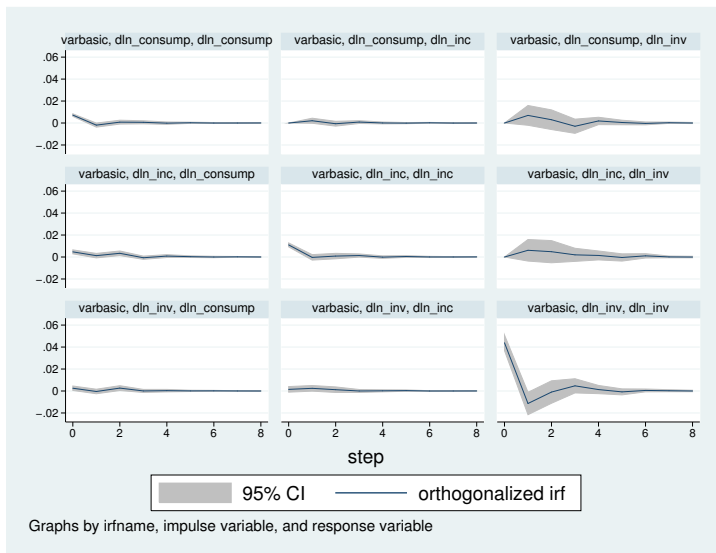
```
. use http://www.stata-press.com/data/r13/lutkepohl2
(Qarterly SA West German macro data, Bil DM, from Lutkepohl 1993 Table E.1)
. varbasic dln_inv dln_inc dln_consump if qtr<=tq(1978q4)
```

Vector autoregression

Sample:	1960q4 - 1978q4	No. of obs	=	73
Log likelihood =	606.307	AIC	=	-16.03581
FPE	= 2.18e-11	HQIC	=	-15.77323
Det(Sigma_ml)	= 1.23e-11	SBIC	=	-15.37691

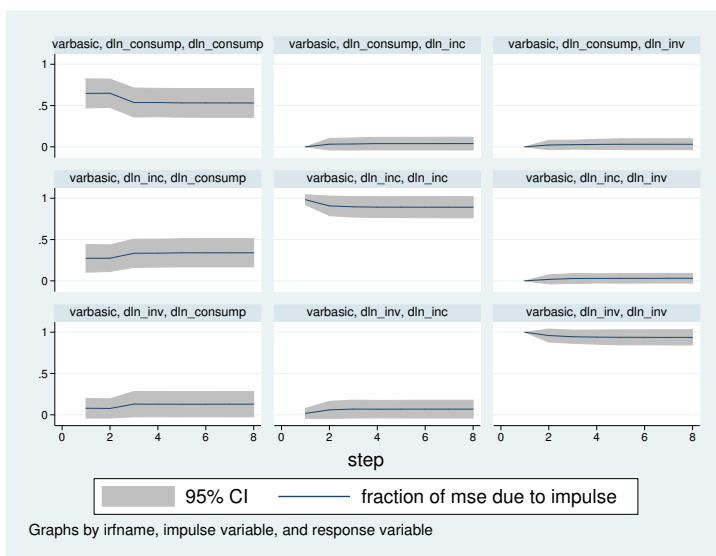
Equation	Parms	RMSE	R-sq	chi2	P>chi2
dln_inv	7	.046148	0.1286	10.76961	0.0958
dln_inc	7	.011719	0.1142	9.410683	0.1518
dln_consump	7	.009445	0.2513	24.50031	0.0004

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
dln_inv						
dln_inv						
L1.	-.3196318	.1192898	-2.68	0.007	-.5534355	-.0858282
L2.	-.1605508	.118767	-1.35	0.176	-.39333	.0722283
dln_inc						
L1.	.1459851	.5188451	0.28	0.778	-.8709326	1.162903
L2.	.1146009	.508295	0.23	0.822	-.881639	1.110841
dln_consump						
L1.	.9612288	.6316557	1.52	0.128	-.2767936	2.199251
L2.	.9344001	.6324034	1.48	0.140	-.3050877	2.173888
_cons	-.0167221	.0163796	-1.02	0.307	-.0488257	.0153814
dln_inc						
dln_inv						
L1.	.0439309	.0302933	1.45	0.147	-.0154427	.1033046
L2.	.0500302	.0301605	1.66	0.097	-.0090833	.1091437
dln_inc						
L1.	-.1527311	.131759	-1.16	0.246	-.4109741	.1055118
L2.	.0191634	.1290799	0.15	0.882	-.2338285	.2721552
dln_consump						
L1.	.2884992	.1604069	1.80	0.072	-.0258926	.6028909
L2.	-.0102	.1605968	-0.06	0.949	-.3249639	.3045639
_cons	.0157672	.0041596	3.79	0.000	.0076146	.0239198
dln_consump						
dln_inv						
L1.	-.002423	.0244142	-0.10	0.921	-.050274	.045428
L2.	.0338806	.0243072	1.39	0.163	-.0137607	.0815219
dln_inc						
L1.	.2248134	.1061884	2.12	0.034	.0166879	.4329389
L2.	.3549135	.1040292	3.41	0.001	.1510199	.558807
dln_consump						
L1.	-.2639695	.1292766	-2.04	0.041	-.517347	-.010592
L2.	-.0222264	.1294296	-0.17	0.864	-.2759039	.231451
_cons	.0129258	.0033523	3.86	0.000	.0063554	.0194962



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)
```



□ **Technical note**

Stata stores the estimated IRFs, OIRFs, and FEVDs in a 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 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
- [TS] `var svar` — Structural vector autoregressive models
- [U] [20 Estimation and postestimation commands](#)
- [TS] `var intro` — Introduction to vector autoregressive models