

Package Name: FAVAR
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Default Proc Name: FAVAR
Default Menu Text: Factor Augmented VAR
Interface: Dialog and command line

Description

This add-in allows you to perform the estimation of Factor-Augmented Vector Regression (FAVAR) models by using a two-step principal component approach (see more details in Bernanke, Boivin, and Elias 2005).

To illustrate the main idea of this add-in, consider the following transition equation (VAR model):

$$\begin{bmatrix} F_t \\ Y_t \end{bmatrix} = \Phi(L) \begin{bmatrix} F_{t-1} \\ Y_{t-1} \end{bmatrix} + v_t,$$

where $\Phi(L)$ is a lag polynomial of finite order d . The error term v_t is mean zero with covariance matrix Q . Y_t is vector of observable economic variables and F_t is vector of unobserved factors.

It is assumed that the informational time series X_t are related to the unobservable factors F_t and the observable factors Y_t by

$$X_t = \Lambda^f F_t + \Lambda^y Y_t + e_t$$

where Λ^f and Λ^y are matrix of factor loadings and error terms e_t are mean zero and will assumed either weakly correlated or uncorrelated. The package estimates FAVAR model by a two-step principal component approach. The identification of structural shocks in the transition equation is recursive (cholesky) where all factors respond with a lag to change in the variable (e.g., federal fund rate) ordered last in Y_t . Other identification schemes will be implemented in the next version.

Dialog

Upon running the add-in from the menus, a dialog will appear:

Enter a number of lag	Enter a Y variable (series)
1	
Enter a group of X variables	Number of factor
	3
Enter a group of X slow-moving variables	Number of horizon
	48
Enter a group of selected X variable for IRF	Number of bootstrap replication
	1000
Enter a vector of transformation code	Sample
	1959M01 2001M07
Enter a name of Y and selected X variables	Percent of confidence interval
	0.9

OK Cancel

The first box lets you specify a number of lags while the second box specify the group of informational time series variables (X_t) from which the unobservable factors F_t is estimated using first k principal component. The next box specify slow-moving variables. Slow-moving variables are not assumed to respond contemporaneously to unanticipated changes in the variable which is ordered last in Y_t . On the next box enter a group of selected macroeconomic variables for impulse response analysis. On the next box enter a vector of transformation code of Y and selected macroeconomic variables: 1=no transformation; 4=logarithm; 5=first difference of logarithm. On the next (6th) box just put names of Y_t and selected macroeconomic variables. It should be text object which contain columns of names. On the next box enter Y_t variable. It should be series, not group. Other boxes specifies some optional inputs.

References:

Bernanke, B. S., J. Boivin and P. Elias (2005), "Measuring the Effects of Monetary Policy: A Factor-Augmented Vector Autoregressive (FAVAR) Approach", Quarterly Journal of Economics 120.1: 387-422

Command line:

Syntax: `favar(options) lags x(group of data) xs(group of slow-moving variables) xir(group of selected variables) tcode(transformation code) name(Y and selected variable) @ endogenous variables(Y)`

E.g. `favar 13 xdata xslow xir tcode yx_name @ ffr`

Options:

<i>argument</i>	<i>explanations</i>
factor	number of factor
horizon	number of steps for impulse response function
rep	number of bootstrap replication
sample	sample size
ci	percent of confidence interval

E.g. `favar(factor=5, horizon=40, rep=2000, ci=0.95) 13 xdata xslow xir tcode yx_name @ ffr`