

Using the Fisher-Whittle Filter EViews Add-in

Point-and-click interface and command-line execution

Purpose

The Fisher-Whittle Filter add-in implements a frequency-domain procedure for detecting deterministic periodic components in economic time series. The add-in estimates a stochastic ARMA spectral background, whitens the periodogram, applies the modified Fisher periodicity test, and retains significant frequencies through Hochberg's family-wise error rate correction.

Point-and-click use

After installing the add-in from the EViews Add-ins repository, select the series to be analyzed and run the Fisher-Whittle Filter from the Add-ins menu. When the add-in is executed without command-line options, EViews opens a dialog window automatically. This dialog allows the user to choose the series, maximum ARMA orders, differencing order, significance level, and diagnostic tests.

Dialog field	Default value	Description
Variable	selected series	Series object to which the filter is applied.
Max P in AR(p)	2	Maximum autoregressive order considered in the ARMA background.
Max q in MA	2	Maximum moving-average order considered in the ARMA background.
Difference order	0	Order of differencing applied before the filter is estimated.
FWER level and Fisher test level	0.05	Significance level used for the Fisher test and Hochberg correction.
Portmanteau Residual Test	off	Optional residual autocorrelation diagnostic.
ARCH test	off	Optional test for conditional heteroskedasticity.
Normality test	off	Optional Jarque-Bera type residual normality diagnostic.

Command-line use

The add-in can also be executed from the EViews command line. The basic syntax is:

```
{%series}.fwfilter
```

where {%series} denotes the name of the EViews series object. If the command is entered without additional options or parameter values, the same dialog window used in the point-and-click interface is displayed. To run the add-in directly from the command line, at least one option or parameter must be supplied.

Option / parameter	Default	Effect
wn	off	Requests the Portmanteau residual autocorrelation test.

Option / parameter	Default	Effect
arch	off	Requests the ARCH residual diagnostic.
norm	off	Requests the residual normality test.
maxp	2	Sets the maximum AR order.
maxq	2	Sets the maximum MA order.
diference	0	Sets the differencing order. The current implementation spells the option as diference.
alpha	0.05	Sets the Fisher test and Hochberg FWER significance level.

Examples

To open the dialog window for the selected series:

```
m2_growth.fwfilter
```

To run the filter with the residual autocorrelation test requested:

```
m2_growth.fwfilter(wn)
```

To run the filter with ARMA orders up to (10,10), no differencing, a 5 percent family-wise error rate level, and all three diagnostic tests:

```
m2_growth.fwfilter(wn, arch, norm, maxp=10, maxq=10, diference=0, alpha=0.05)
```

Output and interpretation

The add-in reports the selected ARMA background, the whitened periodogram, the Fisher test result, the frequencies retained by Hochberg's procedure, and the diagnostic tests requested by the user. Retained frequencies identify deterministic periodic components that exceed the estimated stochastic background. If no frequency is retained, the significant set is empty and the series contains no detected deterministic periodic component at the selected significance level.

Diagnostic rejections should be interpreted as evidence that the stochastic background may be too restrictive. In that case, the retained frequencies should be read cautiously, and a richer background model - for example ARFIMA or ARMA-GARCH - may be required before giving the detected component a substantive interpretation.

Replication note

The empirical data used in the paper are provided in the supplementary material. The code implementing the Fisher-Whittle Filter is available through the EViews Add-ins repository and can be used either through the point-and-click interface or from the command line using `{%series}.fwfilter`.