N-ARDL Eviews

This add-in can estimate the symmetric and asymmetric ARDL in Eviews. All necessary tests are included in the results panel. This Add-in helps analyze linear and non-linear ARDL. There are four options that users can select:

- Linear Format (ordinary ARDL)
- Asymmetry in both short and long-run
- Asymmetry in short-run and symmetry in long-run
- Symmetry in short-run and asymmetry in long-run

External variables, like dummy variables, can be added to the model.

The old version of this project https://github.com/karamelikli/Eviews.NARDL migrated here. The previous version is not supported anymore.

Contributors

This add-in is dedicated to the renowned economist **Prof. Mohsen Bahmani Oskooee**.

This code has been written by Huseyin Karamelikli (Hossein Haghparast Gharamaleki). Thanks to Yashar Tarverdi. His works are expanded here in some directions.

For further contributions and advice, please visit https://github.com/karamelikli/Eviews.NARDL

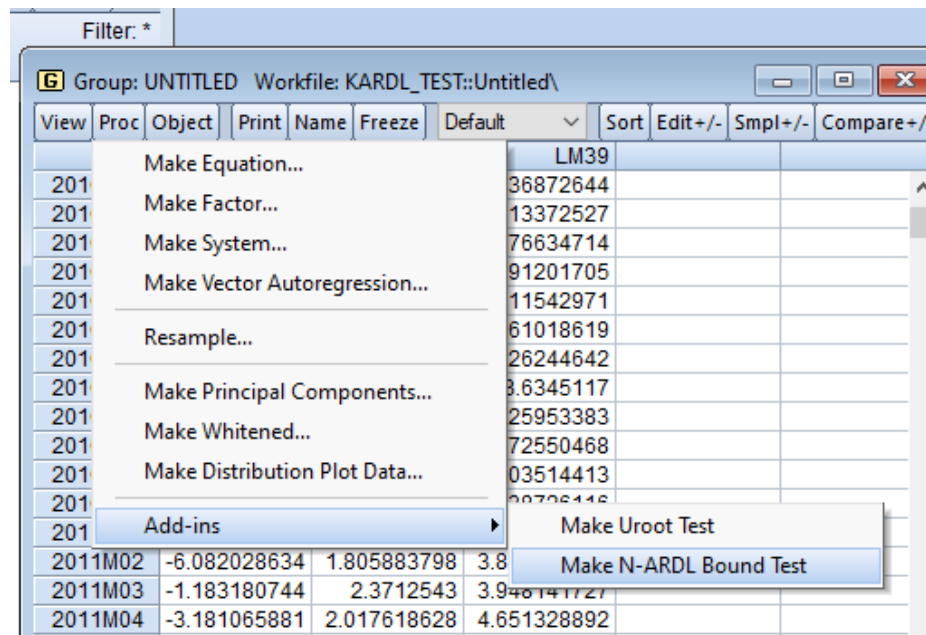All new commits are welcome.

Current version

The last version of the executable add-in (N-ARDL.aipz) is **2.55**.

Installation

Download N-ARDL.aipz file from this repository and click on it or download from addins menu in Eviews.

Manual

Open a series or a group of time series in Eviews. Then, click on Add-in > Make N-ARDL Bound Test

All of your selected series will be displayed in the variables box. The first one is your dependent variable. You can enter dummy variables in the Exogenous Variables box. If you want to define a variable as an asymetric one, you should put its name in both short-run and long-run asymmetric variables boxes. Otherwise, you can have asymmetry just in the short-run or long-run based on the boxes filled. By selcting Plot, dynamic multipliers will be plotted. If you prefer to diffentiation of lags of asymetric variables in Negative and Positive decompositions you should check **different Asymmetric Vars Lags**.

Non Linear And Linear ARDL Bound Approach   ✕

Enter name of variables. First variable would be set as depended variable

LM35 LM38 LM39

Exogenous Variables

Short-run Asymmetric Variables

LM39

Long-run Asymmetric Variables

For more information, contact Huseyin Karamelikli at https://github.com/karamelikli/Eviews-N/

Maximum lag (k-1)

3

Significance level

5%   ⌄

User defined ARDL lags

Which criterion do you want to use?

Schwarz Criterion (SC)   ⌄

What is you Model Type

intercept and no trend   ⌄

☑ Plot Short run multiplier

☐ different Asymmetric Vars Lags

OK   Cancel

The results would be as follows. The first page is an abstract of all contained results, which may be useful to see all the results at a glance.

How to Use OpenOffice/LibreOffice to make the model's formulas

All required formulas would be produced in the final panel. It can be copied and pasted to LibreOffice. Then, selecting and clicking on insert formula object or by menu (Insert > Object > Formula Object...) will change it to a regular visible formula. You can continue working on LibreOffice or save it as a .docx file if you are willing to continue in MS Word.

Figure 1: The reulsts

Theoretical Framework

The long-run model is defined as follow:

$$y_t = \alpha_0 + \alpha_1 x_t + \alpha_2 z_t + \epsilon_t$$

The error correction model can be defined as:

$$\Delta y_t = \beta_0 + \sum_{j=1}^{p} \beta_{1j}\Delta y_{t-j} + \sum_{j=0}^{q} \beta_{2j}\Delta x_{t-j} + \sum_{j=0}^{n} \beta_{3j}\Delta z_{t-j} + \gamma_1 W_t + \theta\epsilon_{t-1} + e_t$$

By using the long-run model into the ECM model we can have:

$$\Delta y_t = \psi + \eta_0 y_{t-1} + \eta_1 x_{t-1} + \eta_2 z_{t-1} + \sum_{j=1}^{p} \beta_{1j}\Delta y_{t-j} + \sum_{j=0}^{q} \beta_{2j}\Delta x_{t-j} + \sum_{j=0}^{n} \beta_{3j}\Delta z_{t-j} + \gamma_1 W_t + e_t$$

We have ARDL model with following definiation:

$$ARDL(p, q, n)$$

We used following modifications to obtain the ARDL model:

$$\psi = \beta_0 - \theta\alpha_0 \ , \ \eta_0 = \theta \ , \ \eta_1 = -\theta\alpha_1 \ , \ \eta_2 = -\theta\alpha_2$$

Then, for reobtaining the long-run coefficients...:

$$\theta = \eta_0 \ , \ \alpha_1 = -\frac{\eta_1}{\theta} \ , \ \alpha_2 = -\frac{\eta_2}{\theta}$$

Asymetrics :

$$x_t^+ = \sum_{i=1}^{t} \Delta x_i^+ = \sum_{i=1}^{t} max(\Delta x_i, 0) \ ; \ x_t^- = \sum_{i=1}^{t} \Delta x_i^- = \sum_{i=1}^{t} min(\Delta x_i, 0)$$

Asymetrics Long Run :

$$y_t = \alpha_0 + \alpha_1^+ x_t^+ + \alpha_1^- x_t^- + \alpha_2 z_t + \epsilon_t$$

Asymetrics Model :

$$\Delta y_t = \psi + \eta_0 y_{t-1} + \eta_1^+ x_{t-1}^+ + \eta_1^- x_{t-1}^- + \eta_2 z_{t-1} + \sum_{j=1}^{p} \beta_{1j} \Delta y_{t-j} + \sum_{j=0}^{q} \beta_{2j}^+ \Delta x_{t-j}^+ + \sum_{j=0}^{m} \beta_{2j}^- \Delta x_{t-j}^- + \sum_{j=0}^{n} \beta_{3j} \Delta z_{t-j} + \gamma_1 W_t + e_t$$

Where:

$$\psi = \beta_0 - \theta\alpha_0 \ , \ \eta_0 = \theta \ , \ \eta_1^+ = -\theta\alpha_1^+ \ , \ \eta_1^- = -\theta\alpha_1^- \ , \ \eta_2 = -\theta\alpha_2$$

Long run Coeficients:

$$\theta = \eta_0 \ , \ \alpha_1^+ = -\frac{\eta_1^+}{\theta} \ , \ \alpha_1^- = -\frac{\eta_1^-}{\theta} \ , \ \alpha_2 = -\frac{\eta_2}{\theta}$$

Asymetrics Short Run Model:

$$\Delta y_t = \psi + \eta_0 y_{t-1} + \eta_1 x_{t-1} + \eta_2 z_{t-1} + \sum_{j=1}^{p} \beta_{1j} \Delta y_{t-j} + \sum_{j=0}^{q} \beta_{2j}^+ \Delta x_{t-j}^+ + \sum_{j=0}^{m} \beta_{2j}^- \Delta x_{t-j}^- + \sum_{j=0}^{n} \beta_{3j} \Delta z_{t-j} + \gamma_1 W_t + e_t$$

Asymetrics Long Run Model:

$$\Delta y_t = \psi + \eta_0 y_{t-1} + \eta_1^+ x_{t-1}^+ + \eta_1^- x_{t-1}^- + \eta_2 z_{t-1} + \sum_{j=1}^{p} \beta_{1j} \Delta y_{t-j} + \sum_{j=0}^{q} \beta_{2j} \Delta x_{t-j} + \sum_{j=0}^{n} \beta_{3j} \Delta z_{t-j} + \gamma_1 W_t + e_t$$

Asymetrics Dynamic:

$$m_h^+ = \sum_{i=0}^{h} \frac{\partial y_{t+i}}{\partial x_t^+} \ ; \ m_h^- = \sum_{i=0}^{h} \frac{\partial y_{t+i}}{\partial x_t^-} \ \lim_{h\to\infty} m_h^+ = \alpha_1^+ \ , \ \lim_{h\to\infty} m_h^- = \alpha_1^-$$

Options

Please don't change the default options unless you have the required knowledge about them. For any additional options, open
`C:\Users\YOURUSERNAME\Documents\EViews Addins\N-ARDL\settings.prg`
and modify the values in the parentheses.

Option	Default	Description
treeSortable	#tree	The tree root ID selector. If you change the root selector then you have to update the CSS as per requirements.
%vars		All vars that should be in the all variables boxes
%evars		Exogenous Variables
%asvars		Short-run Asymmetric Variables
%alvars		Long-run Asymmetric Variables
%maxlag	3	Max lag
!sig	2	significance level for automatic differencing test 1 = 1%, 2=5%, 3=10%
!rest	2	1 "No intercept and no trend" 2 "intercept and no trend" 3"Intercept and trend"
!Astype	1	1 "Short Run" 2"Long Run" 3"Both"
%userdefined		User defined ARDL lags
!criterion	2	1 "Akaike Info Criterion(AIC)" 2 "Schwarz Criterion(SC)" 3"Hannan-Quinn criter" 4 "General to Specified"

Process Settings

Yes=1 No=0

Option	Default	Description
!KeepMainFrame	1	Save All results in workfile
!KeepEquation	1	Save final equation in workfile
!keepAbstract	0	Save final Abstract in workfile
!AddCriterionTable	1	Add Criterion Table values in output
!MakeLibreFormulas	1	Add Libre Office formulas in output

Option	Default	Description
!incZeroLag	1	start Zero lag of ind vars? Sum from 0 to p

Plot Settings

Yes=1 No=0

Option	Default	Description
!PlotShortRun	0	Plot short run effects in model.
!DifferentAsymLag	0	different Asymmetric Variables Lag.
!KeepPlot	0	Save all Plots in model
!Graphlength	39	multiplier Graph length
!PlotDiffs	1	Add differences of two options.
!PlotTrashhold	1	Add trasholds for Asymmetric ARDL.
%IncreaseColor	black	regular colors
%DecreaseColor	blue	Decrease Color
%DiffColor	red	Diff Color
%TrashholdColor	red	Trashhold Color
!IncreaseWidth	2	Increase Width
!DecreaseWidth	2	Decrease Width
!DiffWidth	2	Diff Width
!TrashholdWidth	1	Trashhold Width
!IncreasePat	4	Increase Pat
!DecreasePat	1	Decrease Pat
!DiffPat	1	Diff Pat
!TrashholdPat	2	Trashhold Pat

Texts

Option	Default
%caption	Non Linear And Linear ARDL Bound Approach
%nameofvars	Enter name of variables. First variable would be set as depended variable
%ExogenousTxt	Exogenous Variables
%LAsymmetricTxt	Long-run Asymmetric Variables
%SAsymmetricTxt	Short-run Asymmetric Variables
%ResUnresText	What is you Model Type
%ResUnres	"""No intercept and no trend""
	""intercept and no trend""
	""Intercept and trend"""

Option	Default
%maxlagT	Maximum lag (k-1)
%sigprompt	Significance level
%sigchoice	""1%"" ""5%"" ""10%""
%userdefinedText	User defined ARDL lags
%critprompt	Which criterion do you want to use?
%critchoice	""Akaike Info Criterion (AIC)""
	""Schwarz Criterion (SC)""
	""Hannan-Quinn Criterion (HQ)""
	""General to Specified""
%TableStatus	""Valid"" ""Rejected""
	""Ambiguous""
%incZeroStartTxt	include Zero lag of model?
%PlotShortRun	Plot Short run multiplier
%DifferentAsymLag	different Asymmetric Vars Lags