

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

I would like to express my sincere gratitude to **Prof. Mohsen Bahmani Os-kooee** for his invaluable guidance and insights on econometrics, which significantly influenced the development of this Eviews add-in. His expertise and feedback played a pivotal role in shaping the features and functionality of this tool.

I would like to extend my appreciation to **Yashar Tarverdi** for his prior work on an add-in that served as an essential foundation for this project.

This code has been written by **Huseyin Karamelikli** (Hossein Haghparast Gharamaleki).

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 **2.56**.

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

Sort

Edit+/-

Smpl+/-

Compare+/-

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

Figure 2: Main menu

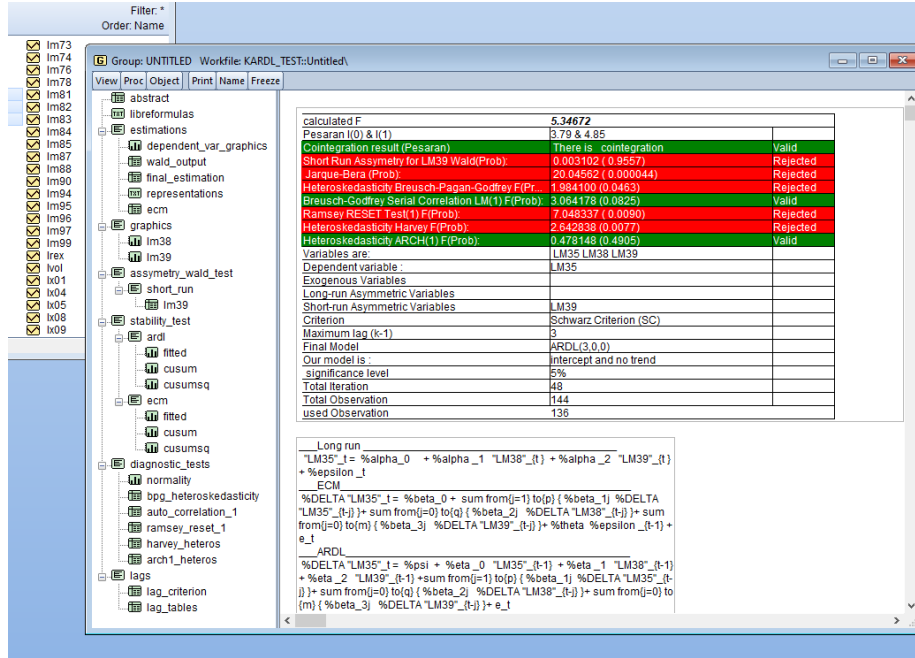


Figure 3: The results

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 definition:

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

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 Coefficients:

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

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:

$$m_h^+ = \sum_{i=0}^h \frac{\partial y_{t+i}}{\partial x_t^+}$$

$$\lim_{h \rightarrow \infty} m_h^+ = \alpha_1^+$$

$$m_h^- = \sum_{i=0}^h \frac{\partial y_{t+i}}{\partial x_t^-}$$

$$\lim_{h \rightarrow \infty} m_h^- = \alpha_1^-$$

Normalization

To obtain the long-run estimated parameters, the following method was utilized:

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

The standard errors are performed by following the Formula:

$$\sigma^2\left(-\frac{\eta_1^+}{\eta_0}\right) = \left(\frac{1}{\eta_0}\right)^2 \sigma^2(\eta_1^+) - 2 \frac{\eta_1^+}{\eta_0^3} COV(\eta_1^+, \eta_0) + \left(\frac{\eta_1^+}{\eta_0^2}\right)^2 \sigma^2(\eta_0)$$

Please note that the standardized calculation of the constant is under the following assumption:

$$\frac{\beta_0}{\alpha_0} \approx 0$$

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
%vars		All vars that should be in the all variables boxes
%evars		Exogenous Variables

Option	Default	Description
%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
!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.

Option	Default	Description
%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”“”
%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