# NDK\_SARIMAX\_VALIDATE

Last Modified on 03/14/2016 1:29 pm CDT

- <u>C/C++</u>
- <u>.Net</u>

intstdcall NDK_SARIMAX_VALIDATE ( doublemean,	
double <mark>sigma</mark> ,	
WORD nIntegral,	
double * phis,	
size_t p,	
double * thetas,	
size_t q,	
WORD nSIntegral,	
WORD nSPeriod,	
double * sPhis,	
size_t sP,	
double * sThetas,	
size_t sQ	
)	

Examines the model's parameters for stability constraints (e.g. causality, invertability, stationary, etc.).

### Returns

status code of the operation

# **Return values**

NDK_SUCCESS	Operation successful
NDK_FAILED	Operation unsuccessful. See $\underline{Macros}$ for full list

## Parameters

[in] <b>mean</b>	is the model mean (i.e. mu) for the differenced series.	
[in] <mark>sigma</mark>	is the standard deviation of the model's residuals/innovations.	
[in] <b>nIntegra</b> l	is the non-seasonal difference order	
[in] <b>phis</b>	are the coefficients's values of the non-seasonal AR component	
[in] <b>p</b>	is the order of the non-seasonal AR component	
[in] thetas	are the coefficients's values of the non-seasonal MA component	
[in] <b>q</b>	is the order of the non-seasonal MA component	
[in] <b>nSIntegral</b> is the seasonal difference		
[in] <b>nSPeriod</b>	is the number of observations per one period (e.g. 12=Annual, 4=Quarter)	
[in] <mark>sPhis</mark>	are the coefficients's values of the seasonal AR component	

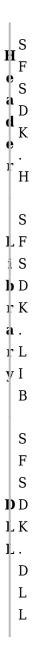
[in] <mark>sP</mark>	is the order of the seasonal AR component
[in] sThetas	are the coefficients's values of the seasonal MA component
[in] <b>sQ</b>	is the order of the seasonal MA component

## Remarks

- 1. The underlying model is described **here.**
- 2. The time series is homogeneous or equally spaced
- 3. The time series may include missing values (e.g. NaN) at either end.
- 4. SARIMAX\_CHECK checks if \(\sigma\gt 0\) and if all the characteristic roots of the underlying ARMA model fall outside the unit circle.
- 5. Using the Solver Add-in in Excel, you can specify the return value of SARIMAX\_CHECK as a constraint to ensure a stationary ARMA model.
- 6. The intercept or the regression constant term input argument is optional. If omitted, a zero value is assumed.
- 7. For the input argument Beta:
  - The input argument is optional and can be ommitted, in which case no regression component is included (i.e. plain SARIMA).
  - The order of the parameters defines how the exogneous factor input arguments are passed.
- 8. The long-run mean argumen (mean) of the differenced regression residuals can take any value. If ommitted, a zero value is assumed.
- 9. The residuals/innovations standard deviation (sigma) must greater than zero.
- 10. For the input argument phi (parameters of the non-seasonal AR component):
  - The input argument is optional and can be ommitted, in which case no non-seasonal AR component is included.
  - $\circ\,$  The order of the parameters starts with the lowest lag
  - The order of the non-seasonal AR component model is solely determined by the order of the last value in the array with a numeric value (vs. missing, or error).
- 11. For the input argument theta (parameters of the non-seasonal MA component):
  - The input argument is optional and can be ommitted, in which case no non-seasonal MA component is included.
  - $\circ\,$  The order of the parameters starts with the lowest lag
  - The order of the non-seasonal MA component model is solely determined by the order of the last value in the array with a numeric value (vs. missing, or error).
- 12. For the input argument sPhi (parameters of the seasonal AR component):
  - The input argument is optional and can be ommitted, in which case no seasonal AR component is included.
  - $\circ\,$  The order of the parameters starts with the lowest lag
  - The order of the seasonal AR component model is solely determined by the order of the last value in the array with a numeric value (vs. missing, or error).
- 13. For the input argument sTheta (parameters of the seasonal MA component):
  - $\circ\,$  The input argument is optional and can be omitted, in which case no seasonal MA component is included.
  - $\circ\,$  The order of the parameters starts with the lowest lag

- The order of the seasonal MA component model is solely determined by the order of the last value in the array with a numeric value (vs. missing, or error).
- 14. The non-seasonal integration order d is optional and can be omitted, in which case d is assumed zero.
- 15. The seasonal integration order sD is optional and can be omitted, in which case sD is assumed zero.
- 16. The season length s is optional and can be omitted, in which case s is assumed zero (i.e. Plain ARIMA).

#### Requirements



#### Examples

#### References

Hamilton, J .D.; <u>Time Series Analysis</u>, Princeton University Press (1994), ISBN 0-691-04289-6 Tsay, Ruey S.; <u>Analysis of Financial Time Series</u> John Wiley & SONS. (2005), ISBN 0-471-690740

# See Also

[template("related")]