NDK_SARIMAX_SIM

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- C/C++
- .Net

```
int __stdcall NDK_SARIMAX_SIM ( double *  fBetas,
                                size_t    nFactors,
                                double    mean,
                                double    sigma,
                                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,
                                double *  pData,
                                double ** pFactors,
                                size_t    nSize,
                                UINT      nSeed,
                                size_t    nStep,
                                double *  retVal
                              )
```

Returns an array of cells for the initial (non-optimal), optimal or standard errors of the model's parameters.

Returns

status code of the operation

Return values

NDK_SUCCESS	Operation successful
NDK_FAILED	Operation unsuccessful. See **Macros** for full list.

Parameters

`[in,out]`	**fBetas**	is the weights or loading of the exogneous factors

[in]	**nFactors**	is the number of exognous factors
[in,out]	**mean**	is the mean of the ARMA process
[in]	**sigma**	is the standard deviation of the model's residuals/innovations.
[in]	**nIntegral**	is the non-seasonal difference order
[in]	**phis**	are the coefficients's values of the non-seasonal AR component
[in]	**p**	is the order of the non-seasonal AR component
[in]	**thetas**	are the coefficients's values of the non-seasonal MA component
[in]	**q**	is the order of the non-seasonal MA component
[in]	**nSIntegral**	is the seasonal difference
[in]	**nSPeriod**	is the number of observations per one period (e.g. 12=Annual, 4=Quarter)
[in]	**sPhis**	are the coefficients's values of the seasonal AR component
[in]	**sP**	is the order of the seasonal AR component
[in]	**sThetas**	are the coefficients's values of the seasonal MA component
[in]	**sQ**	is the order of the seasonal MA component
[in]	**pData**	is the univariate time series data (a one dimensional array).
[in]	**pFactors**	is the past exogneous factors time series data (each column is a separate factor, and each row is an observation).
[in]	**nSize**	is the number of observations in X.
[in]	**nSeed**	is an unsigned integer for setting up the random number generators
[in]	**nStep**	is the simulation time/horizon (expressed in terms of steps beyond end of the time series).
[out]	**retVal**	is the simulated value

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. Each column in the explanatory factors input matrix (i.e. X) corresponds to a separate variable.
5. Each row in the explanatory factors input matrix (i.e. X) corresponds to an observation.
6. Observations (i.e. rows) with missing values in X or Y are assumed missing.
7. The number of rows of the explanatory variable (X) must be greater or equal to the number of rows of the response variable (Y) plus simulation horizon.
8. The intercept or the regression constant term input argument is optional. If omitted, a zero value is assumed.
9. For the input argument - Beta:
    - The input argument is optional and can be omitted, in which case no regression component is included (i.e. plain SARIMA).
    - The order of the parameters defines how the exogenous factor input arguments are passed.
    - One or more parameters may have missing value or an error code(i.e. #NUM!,

#VALUE!, etc.).

10. The long-run mean argument (mean) of the differenced regression residuals can take any value. If omitted, a zero value is assumed.
11. The residuals/innovations standard deviation (sigma) must greater than zero.
12. For the input argument - phi (parameters of the non-seasonal AR component):
    - The input argument is optional and can be omitted, in which case no non-seasonal AR component is included.
    - 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).
13. For the input argument - theta (parameters of the non-seasonal MA component):
    - The input argument is optional and can be omitted, in which case no non-seasonal MA component is included.
    - 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).
14. For the input argument - sPhi (parameters of the seasonal AR component):
    - The input argument is optional and can be omitted, in which case no seasonal AR component is included.
    - 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).
15. For the input argument - sTheta (parameters of the seasonal MA component):
    - The input argument is optional and can be omitted, in which case no seasonal MA component is included.
    - 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).
16. The non-seasonal integration order - d - is optional and can be omitted, in which case d is assumed zero.
17. The seasonal integration order - sD - is optional and can be omitted, in which case sD is assumed zero.
18. The season length - s - is optional and can be omitted, in which case s is assumed zero (i.e. Plain ARIMA).

Requirements

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b D
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B

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D
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Examples

References

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

See Also

[template("related")]