NDK_SARIMA_FORE

Last Modified on 07/08/2016 12:20 pm CDT

- C/C++
- .Net

int __stdcall NDK_SARIMA_FORE(double *		**pData,**
	size_t	**nSize,**
	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,**
	size_t	**nStep,**
	FORECAST_RETVAL_FUNC	**retType,**
	double	**alpha,**
	double *	**retVal**
)		

Calculates the out-of-sample forecast statistics.

Returns

status code of the operation

Return values

NDK_SUCCESS Operation successful

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

Parameters

[in] **pData**   is the univariate time series data (a one dimensional array).

[in] **nSize**   is the number of observations in pData.

[in] **mean**   is the model mean (i.e. mu).

[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]	**nStep**	is the forecast time/horizon (expressed in terms of steps beyond end of the time series).
[in]	**retType**	is a switch to select the type of value returned

Order	Description
1	Mean forecast value (default)
2	Forecast standard error (aka local volatility)
3	Volatility term structure
4	Lower limit of the forecast confidence interval
5	Upper limit of the forecast confidence interval

[in]	**alpha**	is the statistical significance level. If missing, a default of 5% is assumed.
[out]	**retVal**	is the calculated forecast 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. The long-run mean argument (mean) can take any value or be omitted, in which case a zero value is assumed.
5. The residuals/innovations standard deviation (sigma) must be greater than zero.
6. 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).
7. 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).
8. 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).

9. 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).

10. The non-seasonal integration order - d - is optional and can be omitted, in which case d is assumed to be zero.

11. The seasonal integration order - sD - is optional and can be omitted, in which case sD is assumed to be zero.

12. The season length - s - is optional and can be omitted, in which case s is assumed to be zero (i.e. plain ARIMA).

Requirements

Header	SFSDK.H
Library	SFSDK.LIB
DLL	SFSDK.DLL

Examples

```
int NDK_SARIMA_FORE(double[]    pData,
                    UIntPtr      nSize,
                    double       mean,
                    double       sigma,
                    short        nIntegral,
                    double[]     phis,
                    UIntPtr      p,
                    double[]     thetas,
                    UIntPtr      q,
                    short        nSIntegral,
                    double[]     sPhis,
                    UIntPtr      sP,
                    double[]     sThetas,
```

Namespace: NumXLAPI
Class: SFSDK
Scope: Public
Lifetime: Static

UIntPtr	sQ,
UIntPtr	nStep,
FORECAST_RETVAL_FUNC	retType,
double	alpha,
ref double	retVal
)	

Calculates the out-of-sample forecast statistics.

Return Value

a value from **NDK_RETCODE** enumeration for the status of the call.

NDK_SUCCESS operation successful
Error   Error Code

Parameters

[in] **pData** is the univariate time series data (a one dimensional array).
[in] **nSize** is the number of observations in pData.
[in] **mean** is the model mean (i.e. mu).
[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] **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] **nStep** is the forecast time/horizon (expressed in terms of steps beyond end of the time series).
[in] **retType** is a switch to select the type of value returned

Order	Description
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3	Volatility term structure
4	Lower limit of the forecast confidence interval
5	Upper limit of the forecast confidence interval

[in] **alpha** is the statistical significance level. If missing, a default of 5% is assumed.
[out] **retVal** is the calculated forecast 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. The long-run mean argument (mean) can take any value or be omitted, in which case a zero value is assumed.
5. The residuals/innovations standard deviation (sigma) must be greater than zero.
6. 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).
7. 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).
8. 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).
9. 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).
10. The non-seasonal integration order - d - is optional and can be omitted, in which case d is assumed to be zero.
11. The seasonal integration order - sD - is optional and can be omitted, in which case sD is assumed to be zero.
12. The season length - s - is optional and can be omitted, in which case s is assumed to be zero (i.e. plain ARIMA).

Exceptions

Exception Type	Condition
None	N/A

Requirements

Namespace	NumXLAPI
Class	SFSDK
Scope	Public
Lifetime	Static
Package	NumXLAPI.DLL

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")]