NDK_ARMA_FORE

Last Modified on 07/08/2016 9:49 am CDT

- C/C++
- .Net

int NDK_ARMA_FORE(double *	pData,
size_t	nSize,
double	mean,
double	sigma,
double *	phis,
size_t	p,
double *	thetas,
size_t	q,
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 ARMA model mean (i.e. mu).

[in] **sigma**   is the standard deviation of the model's residuals/innovations.

[in] **phis**   are the parameters of the AR(p) component model (starting with the lowest lag).

[in] **p**   is the number of elements in phis (order of AR component)

[in] **thetas** are the parameters of the MA(q) component model (starting with the lowest lag).

[in] **q**   is the number of elements in thetas (order of 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 (FORECAST_MEAN, FORECAST_STDEV , ..)

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 (NaN) at either end.
4. The long-run 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:
   - The input argument is optional and can be omitted, in which case no AR component is included.
   - The order of the parameters starts with the lowest lag.
   - One or more parameters may have missing values or an error code (i.e. #NUM!, #VALUE!, etc.).
   - The order of the 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:
   - The input argument is optional and can be omitted, in which case no MA component is included.
   - The order of the parameters starts with the lowest lag.
   - One or more values in the input argument can be missing or an error code (i.e. #NUM!, #VALUE!, etc.).
   - The order of the MA component model is solely determined by the order of the last value in the array with a numeric value (vs. missing or error).

Requirements

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

Examples

int NDK_ARMA_FORE(double[]	pData,	**Namespace:** NumXLAPI
UIntPtr	nSize,	**Class:** SFSDK
double	mean,	**Scope:** Public
double	sigma,	**Lifetime:** Static
double[]	phis,	
UIntPtr	p,	
double[]	thetas,	
UIntPtr	q,	
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 ARMA model mean (i.e. mu).
[in] **sigma**   is the standard deviation of the model's residuals/innovations.
[in] **phis**   are the parameters of the AR(p) component model (starting with the lowest lag).
[in] **p**   is the number of elements in phis (order of AR component)
[in] **thetas**   are the parameters of the MA(q) component model (starting with the lowest lag).
[in] **q**   is the number of elements in thetas (order of 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 (FORECAST_MEAN, FORECAST_STDEV , ..)

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 (NaN) at either end.
4. The long-run 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:
   - The input argument is optional and can be omitted, in which case no AR component is included.
   - The order of the parameters starts with the lowest lag.
   - One or more parameters may have missing values or an error code (i.e. #NUM!, #VALUE!, etc.).
   - The order of the 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:
   - The input argument is optional and can be omitted, in which case no MA component is included.
   - The order of the parameters starts with the lowest lag.
   - One or more values in the input argument can be missing or an error code (i.e. #NUM!, #VALUE!, etc.).
   - The order of the MA component model is solely determined by the order of the last value in the array with a numeric value (vs. missing or error).

Exceptions

Exception Type	Condition
None	N/A

Requirements

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

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")]