NDK_ARIMA_PARAM

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- C/C++
- .Net

```
int __stdcall NDK_ARIMA_PARAM(double *                pData,
                              size_t                  nSize,
                              double *                mean,
                              double *                sigma,
                              WORD                    nIntegral,
                              double *                phis,
                              size_t                  p,
                              double *                thetas,
                              size_t                  q,
                              MODEL_RETVAL_FUNC       retType,
                              size_t                  maxIter
                             )
```

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]	**pData**	is the univariate time series data (a one dimensional array).
[in]	**nSize**	is the number of observations in pData.
[in,out]	**mean**	is the ARMA model mean (i.e. mu).
[in,out]	**sigma**	is the standard deviation of the model's residuals/innovations.
[in]	**nIntegral**	is the model's integration order.
[in,out]	**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,out]	**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]	**retType**	is a switch to select the type of value returned: 1= Quick Guess, 2=Calibrated, 3= Std. Errors

Order	Description
1	Quick guess (non-optimal) of parameters values (default)

	2	Calibrated (optimal) values for the model's parameters
	3	Standard error of the parameters' values
[in]	**maxIter**	is the maximum number of iterations used to calibrate the model. If missing or less than 100, the default maximum of 100 is assumed.

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. ARIMA_PARAM returns an array for the values (or errors) of the model's parameters in the following order:
   - μ
   - $\phi_1,\phi_2,...,\phi_p$
   - $\theta_1,\theta_2,...,\theta_q$
   - σ
5. The integration order argument (d) must be a positive integer.
6. The long-run mean can take any value or may be omitted, in which case a zero value is assumed.
7. The residuals/innovations standard deviation (sigma) must be greater than zero.
8. 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.
   - 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).
9. 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.
   - 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_ARIMA_PARAM(double[]                pData,
                    UInPtr                  nSize,
                    ref double              mean,
                    ref double              sigma,
                    short                   nIntegral,
                    double[]                phis,
                    UIntPtr                 p,
                    double[]                thetas,
                    UIntPtr                 q,
                    MODEL_RETVAL_FUNC       retType,
                    UIntPtr                 maxIter
                   )
```

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

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

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,out]	**mean**	is the ARMA model mean (i.e. mu).
[in,out]	**sigma**	is the standard deviation of the model's residuals/innovations.
[in]	**nIntegral**	is the model's integration order.
[in,out]	**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,out]	**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]	**retType**	is a switch to select the type of value returned: 1= Quick Guess, 2=Calibrated, 3= Std. Errors

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[in]	**maxIter**	is the maximum number of iterations used to calibrate the model. If missing or less than 100, the default maximum of 100 is assumed.

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. ARIMA_PARAM returns an array for the values (or errors) of the model's parameters in the following order:
   - μ
   - $\phi_1,\phi_2,...,\phi_p$
   - $\theta_1,\theta_2,...,\theta_q$
   - σ
5. The integration order argument (d) must be a positive integer.
6. The long-run mean can take any value or may be omitted, in which case a zero value is assumed.
7. The residuals/innovations standard deviation (sigma) must be greater than zero.
8. 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.
   - 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).
9. 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.
   - 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")]