

# NDK\_SARIMA\_PARAM

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- C/C++
- .Net

```
int __stdcall NDK_SARIMA_PARAM(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,
                                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]	<b>pData</b>	is the univariate time series data (a one dimensional array).
[in]	<b>nSize</b>	is the number of observations in pData.
[in,out]	<b>mean</b>	is the mean of the ARMA process
[in,out]	<b>sigma</b>	is the standard deviation of the model's residuals/innovations.
[in]	<b>nIntegral</b>	is the non-seasonal difference order
[in,out]	<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,out]	<b>thetas</b>	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] **nSIntegral** is the seasonal difference
- [in] **nSPeriod** is the number of observations per one period (e.g. 12=Annual, 4=Quarter)
- [in,out] **sPhis** are the coefficients's values of the seasonal AR component
- [in] **sP** is the order of the seasonal AR component
- [in,out] **sThetas** are the coefficients's values of the seasonal MA component
- [in] **sQ** is the order of the seasonal 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. 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.
  - One or more parameters may have missing values or error codes (i.e. #NUM!, #VALUE!, etc.).
  - 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.
  - One or more values in the input argument can be missing or an error code (i.e. #NUM!, #VALUE!, etc.).
  - 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.
  - One or more parameters may have missing values or error codes (i.e. #NUM!, #VALUE!, etc.).
  - 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.
- One or more values in the input argument can be missing or an error code (i.e. #NUM!, #VALUE!, etc.).
- 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

<b>Header</b>	SFSDK.H
<b>Library</b>	SFSDK.LIB
<b>DLL</b>	SFSDK.DLL

## Examples

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

<b>Namespace:</b> NumXLAPI
<b>Class:</b> SFSDK
<b>Scope:</b> Public
<b>Lifetime:</b> Static

```

    UIntPtr          sP,
    double[]         sThetas,
    UIntPtr          sQ,
    MODEL_RETVAL_FUNC retType,
    UIntPtr          maxIter
)

```

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 mean of the ARMA process
- [in,out] **sigma**    is the standard deviation of the model's residuals/innovations.
- [in]     **nIntegral** is the non-seasonal difference order
- [in,out] **phis**     are the coefficients's values of the non-seasonal AR component
- [in]     **p**         is the order of the non-seasonal AR component
- [in,out] **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,out] **sPhis**     are the coefficients's values of the seasonal AR component
- [in]     **sP**         is the order of the seasonal AR component
- [in,out] **sThetas**   are the coefficients's values of the seasonal MA component
- [in]     **sQ**         is the order of the seasonal MA component
- [in]     **retType**   is a switch to select the type of value returned: 1= Quick Guess, 2=Calibrated, 3= Std. Errors

#### Order Description

- | 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. 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.
  - One or more parameters may have missing values or error codes (i.e. #NUM!, #VALUE!, etc.).
  - 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.
  - One or more values in the input argument can be missing or an error code (i.e. #NUM!, #VALUE!, etc.).
  - 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.
  - One or more parameters may have missing values or error codes (i.e. #NUM!, #VALUE!, etc.).
  - 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.
  - One or more values in the input argument can be missing or an error code (i.e. #NUM!, #VALUE!, etc.).
  - 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
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### Requirements

<b>Namespace</b>	NumXLAPI
<b>Class</b>	SFSDK
<b>Scope</b>	Public
<b>Lifetime</b>	Static
<b>Package</b>	NumXLAPI.DLL

### Examples

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### 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")]

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