

# NDK\_ARMA\_GOF

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- C/C++
- .Net

```
int __stdcall NDK_ARMA_GOF(double * pData,
                          size_t  nSize,
                          double  mean,
                          double  sigma,
                          double * phis,
                          size_t  p,
                          double * thetas,
                          size_t  q,
                          WORD  retType,
                          double * retVal
                          )
```

Computes the log-likelihood ((LLF), Akaike Information Criterion (AIC) or other goodness of fit function of the ARMA model.

## 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] **retType** is a switch to select a fitness measure

### Order Description

- |   |                                                  |
|---|--------------------------------------------------|
| 1 | Log-Likelihood Function (LLF) (default)          |
| 2 | Akaike Information Criterion (AIC)               |
| 3 | Schwarz/Bayesian Information Criterion (SIC/BIC) |
| 4 | Hannan-Quinn information criterion (HQC)         |

- [out] **retVal** is the calculated goodness of fit 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 can take any value or be omitted, in which case a zero value is assumed.
5. The residuals/innovations standard deviation (sigma) must 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).
8. Missing parameters values reduce the model's actual number of overall parameters, thus improving the AIC, BIC, and HQC statistics.

## Requirements

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

## Examples

```
int NDK_ARMA_GOF(double[] pData,  
                UIntPtr nSize,
```

Namespace: NumXLAPI  
Class: SFSDK

```

double    mean,
double    sigma,
double[]  phis,
UIntPtr   p,
double *  thetas,
UIntPtr   q,
short     retType,
ref double retVal
)

```

**Scope:** Public  
**Lifetime:** Static

Computes the log-likelihood ((LLF), Akaike Information Criterion (AIC) or other goodness of fit function of the ARMA model.

### 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] **retType** is a switch to select a fitness measure

#### Order Description

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[out] **retVal** is the calculated goodness of fit 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 can take any value or be omitted, in which case a zero value is assumed.
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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).

8. Missing parameters values reduce the model's actual number of overall parameters, thus improving the AIC, BIC, and HQC statistics.

### Exceptions

Exception Type	Condition
None	N/A

### Requirements

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

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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

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- Hamilton, J .D.; [Time Series Analysis](#) , Princeton University Press (1994), ISBN 0-691-04289-6  
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## See Also

[template("related")]

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