

NDK_ARIMA_SIM

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- C/C++
- .Net

```
int __stdcall NDK_ARIMA_SIM(double mean,
                            double sigma,
                            WORD nIntegral,
                            double *phis,
                            size_t p,
                            double *thetas,
                            size_t q,
                            double *pData,
                            size_t nSize,
                            UINT nSeed,
                            double *retVal,
                            size_t nSteps
                            )
```

Returns an array of cells for the simulated values.

Returns

status code of the operation

Return values

NDK_SUCCESS Operation successful

NDK_FAILED Operation unsuccessful. See [Macros](#) for full list.

Parameters

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

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

[in] **nIntegral** is the model's integration order.

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

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

[in] **nSeed** is an unsigned integer for setting up the random number generators

[out] **retVal** is the calculated simulation value

[in] **nSteps** is the number of future steps to simulate for.

Remarks

1. The underlying model is described here.
2. NDK_ARMA_SIM returns an array of one simulation path starting from the end of the input data.
3. The input data argument (i.e. latest observations) is optional. If omitted, an array of zeroes is assumed.
4. The time series is homogeneous or equally spaced.
5. The time series may include missing values (e.g. NaN) at either end.
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.
 - 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.
 - 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_SIM(double[] mean,
                 double sigma,
                 short nIntegral,
                 double *phis,
                 size_t p,
                 double[] thetas,
                 UIntPtr q,
```

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

```
double[] pData,  
UIntPtr nSize,  
UIntPtr nSeed,  
double[] retVal,  
UIntPtr nSteps  
)
```

Returns an array of cells for the simulated values.

Return Value

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

NDK_SUCCESS operation successful

Error Error Code

Parameters

- [in] **mean** is the ARMA model mean (i.e. mu).
- [in] **sigma** is the standard deviation of the model's residuals/innovations.
- [in] **nIntegral** is the model's integration order.
- [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] **pData** is the univariate time series data (a one dimensional array).
- [in] **nSize** is the number of observations in pData.
- [in] **nSeed** is an unsigned integer for setting up the random number generators
- [out] **retVal** is the calculated simulation value
- [in] **nSteps** is the number of future steps to simulate for.

Remarks

1. The underlying model is described here.
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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.
 - 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.
- 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")]
