

NDK_GARCHM_PARAM

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- C/C++
- .Net

```
int __stdcall NDK_GARCHM_PARAM(double * pData,
                                size_t  nSize,
                                double * mu,
                                double * flambda,
                                double * Alphas,
                                size_t  p,
                                double * Betas,
                                size_t  q,
                                WORD  nInnovationType,
                                double * nu,
                                WORD  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] | mu | is the GARCH model conditional mean (i.e. mu). |
| [in,out] | flambda | is the volatility coefficient for the mean. In finance, lambda is referenced as the risk premium. |
| [in,out] | Alphas | are the parameters of the ARCH(p) component model (starting with the lowest lag). |
| [in] | p | is the number of elements in Alphas array |
| [in,out] | Betas | are the parameters of the GARCH(q) component model (starting with the lowest lag). |
| [in] | q | is the number of elements in Betas array |
| [in] | nInnovationType | is the probability distribution function of the innovations/residuals (see INNOVATION_TYPE) |
- INNOVATION_GAUSSIAN Gaussian Distribution (default)

- INNOVATION_TDIST Student's T-Distribution,
- INNOVATION_GED Generalized Error Distribution (GED)

[in,out] **nu**

is the shape factor (or degrees of freedom) of the innovations/residuals probability distribution function.

[in] **retType**

is a switch to select the type of value returned: 1= Quick Guess, 2=Calibrated, 3= Std. Errors (see [MODEL_RETVAL_FUNC](#))

[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. #N/A) at either end.

Requirements

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

```
int NDK_GARCHM_PARAM(double[] pData,
                    UIntPtr nSize,
                    double[] mu,
                    ref double lambda,
                    double[] Alphas,
                    UIntPtr p,
                    double[] Betas,
                    UIntPtr q,
                    short nInnovationType,
                    ref double nu,
                    short 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]	mu	is the GARCH model conditional mean (i.e. mu).
[in,out]	flambda	is the volatility coefficient for the mean. In finance, lambda is referenced as the risk premium.
[in,out]	Alphas	are the parameters of the ARCH(p) component model (starting with the lowest lag).
[in]	p	is the number of elements in Alphas array
[in,out]	Betas	are the parameters of the GARCH(q) component model (starting with the lowest lag).
[in]	q	is the number of elements in Betas array
[in]	nInnovationType	is the probability distribution function of the innovations/residuals (see INNOVATION_TYPE) <ul style="list-style-type: none">• INNOVATION_GAUSSIAN Gaussian Distribution (default)• INNOVATION_TDIST Student's T-Distribution,• INNOVATION_GED Generalized Error Distribution (GED)
[in,out]	nu	is the shape factor (or degrees of freedom) of the innovations/residuals probability distribution function.
[in]	retType	is a switch to select the type of value returned: 1= Quick Guess, 2=Calibrated, 3= Std. Errors (see MODEL_RETVAL_FUNC)
[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. #N/A) at either end.

Exceptions

Exception Type	Condition
None	N/A

Requirements

Namespace	NumXLAPI
Class	SFSDK

Scope	Public
Lifetime	Static
Package	NumXLAPI.DLL

Examples

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")]
