NDK_GARCH_GOF

Last Modified on 11/25/2019 11:26 am CST

- C/C++
- .Net

```
int __stdcall NDK_GARCH_GOF(double *      pData,
                            size_t        nSize,
                            double        mu,
                            const double * Alphas,
                            size_t        p,
                            const double * Betas,
                            size_t        q,
                            WORD          nInnovationType,
                            double        nu,
                            WORD          retType,
                            double *      retVal
                            )
```

Computes the log-likelihood ((LLF), Akaike Information Criterion (AIC) or other goodness of fit function of the GARCH 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] **mu**   is the GARCH model conditional mean (i.e. mu).

[in] **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] **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]	**nu**	is the shape factor (or degrees of freedom) of the innovations/residuals probability distribution function.
[in]	**retType**	is a switch to select a fitness measure (see **GOODNESS_OF_FIT_FUNC**)
[out]	**retVal**	is the calculated goodness of fit value.

Remarks

1. The underlying model is described **here**.
2. The Log-Likelihood Function (LLF) is described **here**.
3. The time series is homogeneous or equally spaced.
4. The time series may include missing values (e.g. #N/A) at either end.
5. The maximum likelihood estimation (MLE) is a statistical method for fitting a model to the data and provides estimates for the model's parameters.
6. The number of parameters in the input argument - alpha - determines the order of the ARCH component model.
7. The number of parameters in the input argument - beta - determines the order of the GARCH component model.

Requirements

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

---

int NDK_GARCH_GOF(double[] **pData,**
UIntPtr **nSize,**
double **mu,**
double[] **Alphas,**
UIntPtr **p,**
double[] **Betas,**
UIntPtr **q,**

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

```
                    short       nInnovationType,
                    double      nu,
                    short       retType,
                    ref double  retVal
                    )
```

Computes the log-likelihood ((LLF), Akaike Information Criterion (AIC) or other goodness of fit function of the GARCH 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] **mu**   is the GARCH model conditional mean (i.e. mu).
[in] **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] **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] **nu**   is the shape factor (or degrees of freedom) of the innovations/residuals probability distribution function.
[in] **retType**   is a switch to select a fitness measure (see **GOODNESS_OF_FIT_FUNC**)
[out] **retVal**   is the calculated goodness of fit value.

Remarks

1. The underlying model is described **here**.
2. The Log-Likelihood Function (LLF) is described **here**.

3. The time series is homogeneous or equally spaced.
4. The time series may include missing values (e.g. #N/A) at either end.
5. The maximum likelihood estimation (MLE) is a statistical method for fitting a model to the data and provides estimates for the model's parameters.
6. The number of parameters in the input argument - alpha - determines the order of the ARCH component model.
7. The number of parameters in the input argument - beta - determines the order of the GARCH component model.

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

* D. S.G. Pollock; Handbook of Time Series Analysis, Signal Processing, and Dynamics;

Academic Press; Har/Cdr edition(Nov 17, 1999), ISBN: 125609906

* Box, Jenkins and Reisel; [Time Series Analysis: Forecasting and Control](); John Wiley & SONS.; 4th edition(Jun 30, 2008), ISBN: 470272848

See Also