

NDK_EGARCH_GOF

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- C/C++
- .Net

```
int __stdcall NDK_EGARCH_GOF(double *    pData,
                             size_t     nSize,
                             double     mu,
                             const double * Alphas,
                             size_t     p,
                             const double * Gammas,
                             size_t     g,
                             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 E-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] Gammas | are the leverage parameters (starting with the lowest lag). |
| [in] g | is the number of elements in Gammas. Must be equal to (p-1). |
| [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 number of gamma-coefficients must match the number of alpha-coefficients.
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.
8. The maximum likelihood estimation (MLE) is a statistical method for fitting a model to the data and provides estimates for the model's parameters.

Requirements

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

```
int NDK_EGARCH_GOF(double[] pData,
                   UIntPtr nSize,
                   double mu,
                   double Alphas,
                   UIntPtr p,
                   double[] Gammas,
                   double[] Betas,
                   UIntPtr q,
                   short nInnovationType,
                   double nu,
```

Namespace: NumXLAPI

Class: SFSDK

Scope: Public

Lifetime: Static

```
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 E-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] Gammas | are the leverage parameters (starting with the lowest lag). |
| [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) <ul style="list-style-type: none">• 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 number of gamma-coefficients must match the number of alpha-coefficients.
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.

8. The maximum likelihood estimation (MLE) is a statistical method for fitting a model to the data and provides estimates for the model's parameters.

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

[template("related")]