

# NDK\_GARCHM\_FITTED

Last Modified on 07/15/2016 9:50 am CDT

- [C/C++](#)
- [.Net](#)

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

Returns an array of cells for the fitted values (i.e. mean, volatility and residuals)

## 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] **flambda** is the volatility coefficient for the mean. In finance, lambda is referenced as the risk premium.
- [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 output type ( see [FIT\\_RETVAL\\_FUNC](#))

## 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.
4. The number of parameters in the input argument - alpha - determines the order of the ARCH component model.
5. The number of parameters in the input argument - beta - determines the order of the GARCH component model.

## Requirements

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

```
int NDK_GARCHM_FITTED(double[] pData,  
                    UIntPtr nSize,  
                    double mu,  
                    double lambda,  
                    double[] Alphas,  
                    UIntPtr p,  
                    double[] Betas,  
                    UIntPtr q,  
                    short nInnovationType,  
                    double nu,  
                    short retType  
                    )
```

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

Returns an array of cells for the fitted values (i.e. mean, volatility and residuals)

## 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] **flambda** is the volatility coefficient for the mean. In finance, lambda is referenced as the risk premium.
- [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 output type ( see [FIT\\_RETVAL\\_FUNC](#))

## Remarks

1. The underlying model is described [here](#).
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5. 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

|                  |          |
|------------------|----------|
| <b>Namespace</b> | NumXLAPI |
| <b>Class</b>     | SFSDK    |
| <b>Scope</b>     | Public   |

|                 |              |
|-----------------|--------------|
| <b>Lifetime</b> | Static       |
| <b>Package</b>  | NumXLAPI.DLL |

### Examples

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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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### See Also

[template("related")]

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