

# NDK\_GARCH\_FITTED

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

```
int __stdcall NDK_GARCH_FITTED(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
                               )
```

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] **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_GARCH_FITTED(double[] pData,  
                    UIntPtr nSize,  
                    double mu,  
                    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] **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] **lnInnovationType** 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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