NDK_GARCH_LRVAR

Last Modified on 04/29/2016 1:25 pm CDT

- C/C++
- .Net

```
int __stdcall NDK_GARCH_LRVAR(double          mu,
                              const double *  Alphas,
                              size_t          p,
                              const double *  Betas,
                              size_t          q,
                              WORD            nInnovationType,
                              double          nu,
                              double *        retVal
                             )
```

Calculates the long-run average volatility for the given 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]	**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.
[out]	**retVal**	is the calculated long run value

Remarks

1. The underlying model is described **here**.
2. The GARCH long-run average variance is defined as: \[V_L=\frac{\alpha_o}{1-\sum_{i=1}^{max(p,q)}\left(\alpha_i+\beta_i\right)}\]
3. The time series is homogeneous or equally spaced.
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.
6. GARCH_CHECK examines the model's coefficients for:
   - Coefficients are all positive

Requirements

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

```
int NDK_GARCH_LRVAR(double     mu,
                    double[]   Alphas,
                    UIntPtr    p,
                    double[]   Betas,
                    UIntPtr    q,
                    short      nInnovationType,
                    double     nu,
                    ref double retVal
                   )
```

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

Calculates the long-run average volatility for the given 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]	**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.
[out]	**retVal**	is the calculated long run value

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4. The number of parameters in the input argument - alpha - determines the order of the ARCH component model.
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6. GARCH_CHECK examines the model's coefficients for:
   - Coefficients are all positive

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")]