NDK_XCFTEST

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- C/C++
- .Net

```
int __stdcall NDK_XCFTEST(double * X,
                          double * Y,
                          size_t   N,
                          int      K,
                          double   target,
                          double   alpha,
                          WORD     method,
                          WORD     retType,
                          double * retVal
                         )
```

Calculates the test stats, p-value or critical value of the correlation test.

Returns

status code of the operation

Return values

NDK_SUCCESS Operation successful
NDK_FAILED Operation unsuccessful. See **Macros** for full list.

Parameters

[in] **X** is the first univariate time series data (a one dimensional array).
[in] **Y** is the second univariate time series data (a one dimensional array).
[in] **N** is the number of observations in X (or Y).
[in] **K** is the lag order (e.g. k=0 (no lag), k=1 (1st lag), etc.).
[in] **target** is the assumed correlation value. If missing, a default of zero is assumed.
[in] **alpha** is the statistical significance level. If missing, a default of 5% is assumed.
[in] **method** is the desired correlation coefficient (1=Pearson (default), 2=Spearman, 3=Kendall). If missing, a Pearson coefficient is assumed.
[in] **retType** is a switch to select the return output:

Method	Value	Description
TEST_PVALUE	1	P-Value
TEST_SCORE	2	Test statistics (aka score)
TEST_CRITICALVALUE	3	Critical value.

[out] **retVal** is the calculated test statistics.

Remarks

1. The XCF test hypothesis: \[H_{o}: \rho_{x,y}=0\] \[H_{1}: \rho_{x,y} \neq 0\] Where:

- H_{o} is the null hypothesis ($\hat\rho$ is not different from zero)
- H_{1} is the alternate hypothesis ($\hat\rho$ is statistically significant)
- $\rho_{x,y}$ is the correlation factor between population X and Y

2. The time series is homogeneous or equally spaced.
3. The significance level (i.e. alpha) is only needed for calculating the test critical value.
4. The time series may include missing values (NaN) at either end.
5. This is a two-tails (sides) test, so the computed p-value should be compared with half of the significance level (α).

Requirements

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

Examples

```
int NDK_XCFTEST(double[]   pData1,
                double[]   pData2,
                UInPtr     nSize,
                int        nLag,
                double     target,
                double     alpha,
                UInt16     method,
                UInt16     retType,
                out double retVal
               )
```

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

Calculates the test stats, p-value or critical value of the correlation test.

Returns

status code of the operation

Return values

NDK_SUCCESS Operation successful

NDK_FAILED Operation unsuccessful. See Macros for full list.

Parameters

[in] **pData1** is the first univariate time series data (a one dimensional array).

[in] **pData2** is the second univariate time series data (a one dimensional array).

[in] **nSize** is the number of observations in X (or Y).

[in] **nLag** is the lag order (e.g. k=0 (no lag), k=1 (1st lag), etc.).

[in] **target** is the assumed correlation value. If missing, a default of zero is assumed.

[in] **alpha** is the statistical significance level. If missing, a default of 5% is assumed.

[in] **method** is the desired correlation coefficient (1=Pearson (default), 2=Spearman, 3=Kendall). If missing, a Pearson coefficient is assumed.

[in] **retType** is a switch to select the return output:

Method	Value	Description
TEST_PVALUE	1	P-Value
TEST_SCORE	2	Test statistics (aka score)
TEST_CRITICALVALUE	3	Critical value.

[out] **retVal** is the calculated test statistics.

Remarks

1. The XCF test hypothesis: \[H_{o}: \rho_{x,y}=0\] \[H_{1}: \rho_{x,y} \neq 0\] Where:
   - \(H_{o}\) is the null hypothesis ($\hat\rho$ is not different from zero)
   - \(H_{1}\) is the alternate hypothesis (\(\hat\rho\) is statistically significant)
   - \(\rho_{x,y}\) is the correlation factor between population X and Y
2. The time series is homogeneous or equally spaced.
3. The significance level (i.e. alpha) is only needed for calculating the test critical value.
4. The time series may include missing values (NaN) at either end.
5. This is a two-tails (sides) test, so the computed p-value should be compared with half of the significance level (\(\alpha\)).

Exceptions

Exception Type	Condition
None	N/A

Requirements

Namespace	NumXLAPI
Class	SFSDK
Scope	Public

Lifetime	Static
Package	NumXLAPI.DLL

Examples

References

Hull, John C.; Options, Futures and Other DerivativesFinancial Times/ Prentice Hall (2011), ISBN 978-0132777421

Hans-Peter Deutsch; , Derivatives and Internal Models, Palgrave Macmillan (2002), ISBN 0333977068

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")]