NDK_MLR_FITTED

Last Modified on 05/03/2016 1:10 pm CDT

- C/C++
- .Net

int __stdcall NDK_MLR_FITTED(double ** X,

size_t nXSize, size_t nXVars, LPBYTE mask, size_t nMaskLen, double * Y, size_t nYSize, double intercept, WORD nRetType

Returns the fitted values of the conditional mean, residuals or leverage measures.

)

Returns

status code of the operation

Return values

NDK_SUCCESSOperation successfulNDK_FAILEDOperation unsuccessful. See Macros for full list.

Parameters

[in] X	is the independent (explanatory) variables data matrix, such that each column				
	represents one variable.				
[in] nXSize	is the number of observations (rows) in X.				
[in] nXVars	is the number of independent (explanatory) variables (columns) in X.				
[in] mask	is the boolean array to choose the explanatory variables in the model. If missing,				
	all variables in X are included.				
[in] nMaskLenis the number of elements in the "mask."					
[in] Y	is the response or dependent variable data array (one dimensional array of cells).				
[in] nYSize	is the number of observations in Y.				
[in] intercept is the constant or intercept value to fix (e.g. zero). If missing (i.e. NaN), an					
	intercept will not be fixed and is computed normally.				
[in] nRetType is a switch to select the return output (1=fitted values (default), 2=residuals,					
	3=standardized residuals, 4=leverage, 5=Cook's distance).				
1.	Fitted/conditional mean				
2.	Residuals				
3.	Standardized residuals				
4.	4. Leverage factor (H)				
5.	5. Cook's distance (D)				

Remarks

- 1. The underlying model is described here.
- 2. The regression fitted (aka estimated) conditional mean is calculated as follows: \[\hat y_i = E \\left[Y| x_i1\cdots x_ip \right] = \alpha + \hat \beta_1 \times x_i1 + \cdots + \beta_p \times x_ip\] Residuals are defined as follows: \[e_i = y_i \hat y_i\] The standardized residuals are calculated as follow: \[\bar e_i = \frac{e_i}{\hat \sigma_i}\] Where:
 - \(\hat y\) is the estimated regression value.
 - \(e\) is the error term in the regression.
 - \(\hat e\) is the standardized error term.
 - \(\hat \sigma_i \) is the standard error for the i-th observation.
- 3. For the influential data analysis, SLR_FITTED computes two values: leverage statistics and Cook's distance for observations in our sample data.
- 4. Leverage statistics describe the influence that each observed value has on the fitted value for that same observation. By definition, the diagonal elements of the hat matrix are the leverages. \ [H = X \left(X^\top X \right)^{-1} X^\top\] \[L_i = h_{ii}\] Where:
 - \(H\) is the Hat matrix for uncorrelated error terms.
 - (\mathbb{X}) is a (N x p+1) matrix of explanatory variables where the first column is all ones.
 - $\circ\ \ (L_i\)$ is the leverage statistics for the i-th observation.
 - (h_{ii}) is the i-th diagonal element in the hat matrix.
- 5. Cook's distance measures the effect of deleting a given observation. Data points with large residuals (outliers) and/or high leverage may distort the outcome and accuracy of a regression. Points with a large Cook's distance are considered to merit closer examination in the analysis. \
 - $\label{eq:basic} \label{eq:basic} \lab$

 - \(h_{ii}\) is the leverage statistics (or the i-th diagonal element in the hat matrix).
 - \(\mathrm{MSE}\) is the mean square error of the regression model.
 - \(p\) is the number of explanatory variables.
 - \(e_i\) is the error term (residual) for the i-th observation.
- 6. The sample data may include missing values.
- 7. Each column in the input matrix corresponds to a separate variable.
- 8. Each row in the input matrix corresponds to an observation.
- 9. Observations (i.e. row) with missing values in X or Y are removed.
- 10. The number of rows of the response variable (Y) must be equal to number of rows of the explanatory variables (X).
- 11. The MLR_FITTED function is available starting with version 1.60 APACHE.

Requirements

Header SFSDK.H

	SDK.LIB				
DLL SF	SDK.DLL				
intstdcall NDK_MLR_FITTED(double ** X, Namespace: NumXLAPI					
	:	size_t	nXSize,	Class: SFSDK	
	:	size_t	nXVars,	Scope: Public	
	I	LPBYTE	mask,	Lifetime: Static	
		size_t	nMaskLen,		
		double *			
			nYSize,		
			intercept,		
		WORD	nRetType		
)				
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status code of	f the operatio	n			
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Requirements

Header	SFSDK.H
Library	SFSDK.LIB

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")]