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Collinearity diagnostic applied in ridge estimation through the variance inflation factor

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ABSTRACT

The variance inflation factor (VIF) is used to detect the presence of linear relationships between two or more independent variables (i.e. collinearity) in the multiple linear regression model. However, the traditionally used VIF definitions encounter some problems when extended to the case of the ridge estimation (RE). This paper presents an extension of the VIF in RE by providing two alternative VIF expressions that overcome these problems in the general case. Some characteristics of these expressions are also presented and compared with the traditional expression. The results are illustrated with an economic example in the case of three independent variables and with a Monte Carlo simulation for the general case.

KEYWORDS:

Multiple linear regression collinearity ridge regression multivariables

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Notes

1. Note that a standardized variable is the value of the variable minus its mean, divided by the square root of the number of observations multiplied by its variance while a typified variable is the value of the variable minus its mean, divided by its standard deviation.