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Variance Inflation Factor and Condition Number in multiple linear regression

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ABSTRACT

The Variance Inflation Factor and the Condition Number are measures traditionally applied t s paper presents etical and empirica interest in the com

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Notes

1 Note that the constant term disappears after the standardization of the data.

2 Note that, when data are standardized, the VIF and CN coincide with the result obtained from typified data.

3 Note that these examples are not regression models since n=p.

4 Denoting X1=1, the auxiliary regression to calculate the VIF is expressed as X2=γ1+w, where it is verified that γˆ=X¯2 and, consequently, SSR=∑i=1n(X2i−X¯2)2=SST. In this case, it is always verified that Raux2=1. The version of the previous regression with unit length data is given by X2,lu=γ1lu+w where X2,lu=X/a with a=∑i=1nX2i2 and 1lu=1/n. In this case, γˆ=n/a·X¯2 and, then, SSR=(1/a)∑i=1n(X2i−n·X¯2·1/n)2=SST. Thus, this situation will be similar to the initial one.