

Adding observations in regression analysis

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Abstract

We consider the following situation : In a regression model the least squares estimator of the regression parameter is computed. Some new observations are added to the original observations. What is an efficient method to update the regression parameter estimators?

One method is the matrix inversion-method due to Törnquist. This, however, will only work if very few observations are added. A more efficient method consists in forming the Gram-Schmidt orthogonalizers and computing a linearly sufficient statistic from them.

An additional scaling procedure will finally lead to a new regression model, In this model least squares estimation can either again be done by a computer or by developing new estimation formulae.