Comparison of Confidence Interval in the OLS and Ridge Linear Regression Model: A Comparative study via Simulation

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ABSTRACT
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KEYWORDS
Multiple Linear Regression; Ridge Regression; Multicolinearity

1. Introduction

One of the key assumption of the widely used multiple linear regression model is that the predictors need to be independent of each other. Violating the assumption of independence results in an issue known as multicollinearity. Linear regression maps the relationship between the predictors and dependent variable with a linear equation. If X is a n×p full rank matrix of predictors and Y is a n $\times$ 1 vector of response variables the multiple linear regression can be explained as,

$$Y = X \times \beta + \epsilon$$

, where, β is an p $\times$ 1 unknown regression paramaters and

$$\epsilon$$

is the n $\times$ 1 vector of error with mean zero and equal variance.
Statistical Methodology

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