A COMPARISON OF THREE LINEAR PROGRAMMING MODELS FOR COMPUTING LEAST ABSOLUTE VALUES ESTIMATES

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Abstract

Several methods have been developed to estimate the regression model parameters using the Least Absolute Values method. In this study, three methods for finding Least Absolute Values Estimates developed by Charnes et al. (1995), Gonin and Money (1989) and Li (1998), are compared with respect to Central Process Unit (CPU) time and the size of the determination coefficients.

Keywords: Least Squares, Least Absolute Values, Linear Programming, Determination Coefficients, CPU Time.

1. Introduction

The Least Absolute Value (LAV) is used as an alternative to the Least Squares (LS) method for estimating regression model coefficients. This widely used method depends basically on estimating the coefficients by minimizing the absolute difference between observations and estimation values. In this context, the LAV estimation method could be modelled as a constrained optimization problem. The model will take a very long time to be solved if the number of independent variables and observations are too large. In this respect, several models have came into existence in order to reduce the CPU time. These models were developed and compared with respect to the CPU time, but they were not compared with respect to the determination coefficients of these models. To this end, the most popular three methods using the LAV method will be compared considering both the CPU time and the determination coefficients. Additionally, the estimators of these LAV methods will be compared with those of the LS method with respect to their determination coefficients.

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