An Efficient Variant of Dual to Ratio and Product Estimator in Sample Surveys

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In this paper, we propose a dual to ratio and product estimator for estimating finite population mean of study variable on applying simple transformation to auxiliary variable by using its average values in the population that are generally available in practice. The mean squared error of the proposed estimator have been obtained to the first degree of approximation. It has also been shown that the proposed estimator has greater applicability and is more efficient than the usual estimator. An empirical study is carried out to demonstrate the performance of proposed estimator.

Keywords: auxiliary variable, study variable, mean square error, population mean, simple random sampling

1. Introduction

The ratio method for estimation of population parameters are generally used when auxiliary information about study variable is available. The ratio estimators can be effective when auxiliary variable is positively correlated with study variable. The product estimators behaves similarly as ratio, however, they can be used in case negatively correlated auxiliary variable is available. In order to improve the efficiency of estimation, combination of ratio and product estimators can be used. Some of the important work in this direction is made. Shukla (1966)