A NEW CLASS OF EXPONENTIAL REGRESSION CUM RATIO ESTIMATOR IN TWO PHASE SAMPLING

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Abstract

In this paper, we propose a new class of exponential regression cum ratio estimator using the auxiliary variable for the estimation of the finite population mean under two phase sampling scheme. The Bias and Mean Square Error (MSE) equations of the proposed estimator are obtained and compared with the MSE equations of some existing estimators in two phase sampling. We find theoretically the proposed estimator is always more efficient than classical ratio and regression estimators, Singh and Vishwakarma [17] ratio type exponential estimator in two phase sampling. In addition, theoric results are supported by a numerical example using original data sets.

1. Introduction

In the sampling theory, the use of auxiliary information results in considerable improvement in the precision of estimators of population mean. The ratio and regression methods have been widely used when auxiliary information is available. In literature, number of authors introduced many ratio and regression type estimators by using general linear transformation of the auxiliary variable. For recent development, exponential estimators have been widely studied by several authors such as Bahl and Tuteja [2], Singh et al. [19] and Grover and Kaur [6].

Under various sampling schemes, many exponential estimators, using the population information of the auxiliary variable, have been proposed. However, the knowledge on the population mean of the auxiliary variable is not always available. In this situation, two phase sampling method is the most popular sampling scheme in literature. Two

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