Unbiased estimation of the parameters of Gamma distribution

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ABSTRACT

An open problem for the two-parameter Gamma distribution is whether there exist unbiased estimators (hence, UMVUE) for the shape parameter and/or the reciprocal scale parameter in the classical model of the two-parameter Gamma distribution, based on a random sample of size n. It is shown that such estimators exist iff the sample size n is at least 4, and they have finite variance iff n is at least 6. The form of the estimators is completely described.