

It is well-known that maximum likelihood (ML) estimators of the two parameters in a Gamma distribution do not have closed forms. The Gamma distribution is a special case of a generalized Gamma distribution. Two of the three likelihood equations of the generalized Gamma distribution can be used as estimating equations for the Gamma distribution, based on which simple closed-form estimators for the two Gamma parameters are available. Intuitively, performance of the new estimators based on likelihood equations should be close to the ML estimators. The study consolidates this conjecture by establishing the asymptotic behaviours of the new estimators. In addition, the closed-forms enable bias-corrections to these estimators.