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Calculating Confidence Intervals for Continuous and Discontinuous Functions of Estimated Parameters

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(June 2011)

Abstract:

The delta method is commonly used to calculate confidence intervals of functions of estimated parameters that are differentiable with non-zero, bounded derivatives. When the delta method is inappropriate, researchers usually first use a bootstrap procedure where they i) repeatedly take a draw from the asymptotic distribution of the parameter values and ii) calculate the function value for this draw. They then trim the bottom and top of the distribution of function values to obtain their confidence interval. This note first provides several examples where this procedure and/or delta method fail to provide an appropriate confidence interval. It next presents a method that is appropriate for constructing confidence intervals for functions that are discontinuous or are continuous but have zero or unbounded derivatives. In particular the coverage probabilities for our method converge uniformly to their nominal values, which is not necessarily true for the other methods discussed above.

Text: See [Discussion Paper No. 5816](#)



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