

High Order Penalty Functions in Calibration Estimators

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Abstract

Use of penalty functions in calibration estimators has severally been considered by this author. A calibration problem is transformed to an unconstrained optimization problem by constructing a penalty function. To guarantee convergence in the minimization of the penalty function by the Newton method, the order of the penalty function is usually restricted to 2. In this paper, we consider use of more flexible higher order penalty functions by applying the variable metric method. We report on the results of the resulting population total estimator for a cubic penalty function.

Keywords: variable metric method, calibration, penalty function, model calibration, unconstrained optimization.

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