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Recursive Estimation of Possibly Misspecified MA(1) Models: Convergence of a General Algorithm

Abstract: We introduce a recursive algorithm for estimating the coefficient of a moving average model of order one and obtain convergence results for both correct and misspecified MA(1) models. The form of the algorithm is general enough to encompass Pseudolinear Regression (PLR—also known as AML and RML1) and Recursive Maximum Likelihood (RML2) without monitoring. Stimulated by the approach of Hannan (1980), our convergence results are obtained indirectly by showing that the recursive sequence of estimates can be approximated by a sequence satisfying a recursion of simpler (Robbins-Monro) form for which convergence results applicable to our situation have been obtained by Findley (2005) and, indirectly, H.-F. Chen (2002).