

## ML ESTIMATION FOR MULTIVARIATE SHOCK MODELS VIA AN EM ALGORITHM

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**Abstract.** Multivariate extensions of univariate distributions, though useful, have not been applied in practice mainly due to shortage of inferential procedures caused by numerical complexity. The multivariate Marshall-Olkin distribution is a multivariate extension of the exponential distribution. Its representation as a multivariate shock model makes it appealing for such applications. Unfortunately, ML estimation is not easy and special numerical techniques are needed. In this paper an EM type algorithm based on the multivariate reduction technique is described. The behavior of the algorithm is examined and a numerical example is provided.

*Key words and phrases:* Multivariate reduction, Marshall-Olkin distribution, maximum likelihood estimation.