Robust estimation of a linear Simultaneous Equations Model using *GMM* with limited and full information

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Abstract

Common procedures for the estimation of the coefficients of the linear Simultaneous Equations Model are based on the least squares principle and on the generalized method of moments principle.

Whatever may be the estimation principle, it is important to consider the choice between the limited information approach (*LIM*) (sequential estimation of each individual equation) or the full information approach (*FIM*), (simultaneous estimation of the whole system). Specialists (see for instance Srivastava and Tiwary (1978), Judge *et al.* (1998) and Greene (2003))are not unanimous about the best choice since both approaches show some advantage, depending on the estimation principle.

The present study focus on the generalized method of moments estimator (*GMM*). The estimator has received an increasing attention in recent literature, since it demands less restrictive assumptions than the least squares estimators and it can include, in a natural way, some optimality conditions which are often present in Economic problems. This motivated a comparative study of *LIM versus FIM* under *GMM* estimation (Souto de Miranda *et al.* (2007)). A robust version of the *GMM* was presented in Rocha (2010) for the *FIM* approach. In the present work we give the *LIM* corresponding robust version, which requires a much simplified computation process. A simulation study based on several distributions of the errors of the model and on different sample sizes, makes it possible to evaluate the performance of the new estimator.

Keywords

Linear simultaneous equations model, Limited information methods, Full information methods, Robust estimation, Generalized method of moments.

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