Estimation and balancing of constant-price quarterly I-O tables with autoregressive conditional heteroskedastic errors

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This paper enhances the results of the methodology already presented by the same author in an article on the application of EM algorithm to analyse and forecast long-run I-O coefficient changes (Antonello, P., 2009). In that article it was assumed that the long run dynamics of the demand coefficients of a set of yearly, constant-price I-O tables could be represented by a multinomial logistic function, parameterized in terms of time and of the gross output of the input sector. It was shown that, under these assumptions, by applying the EM algorithm, it was possible to produce Bayesian estimates of long-run input and demand coefficients as well as estimates of the corresponding inter-sectoral flows and of their variance-covariance matrix. In this paper the same methodology and the same data set, supplied by G. Rampa (Economic Systems Research, 20, 3, 259-276), are combined with the GLS balancing method, initially suggested R. Stone, D. G. Champernowne and J. E. Meade (1942), to produce estimates of seasonally adjusted quarterly I-O tables at constant prices. It is assumed that the systematic and random errors affecting the unbalanced quarterly estimated are generated by an ARCH process, i.e. that the conditional distribution of their variance-covariance matrix is AR(1). As an example, the results of an experimental application to the years 1950-2000 are presented.