The estimation of a VECM for a small open economy with exogenous variables

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One of the most popular ways to model macro economic variables is by the Vector Error Correction Model (VECM). The main reasons for this are that it combines the possibility to incorporate economic theory through the error correction part and that it can parsimoniously model the relations between the variables and through time. Besides testing economic theory and forecasting, the VECM is often used calculating impulse responses (i.e. the effect on a variable in the future of a chock today), a quantity of great economic interest. In economic theory a small open economy denotes the economy of a country which is too small to influence the surrounding world in any major way so the surrounding world can be seen as exogenous relative to the economy of that country. The main contribution of this paper is that it proposes how to estimate a VECM with exogeneity restrictions on the short run dynamics and not only on the adjustment parameters (which is commonly available nowadays). A Monte Carlo simulation of impulse responses shows that the proposed model is considerably more efficient, in mean squared error sense, compared to ignoring exogeneity. It is also shown that the empirical size when testing for the number of long run relations is closer to the nominal size. Using empirical data, the small open economy of Sweden is used to exemplify the conclusions of the Monte Carlo simulation.

Keywords: VECM; Impulse responses; Small open economy; Exogeneity.