

Bridging economic theory models and cointegrated vector auto regressive model

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Summary. The paper explains how the cointegrated VAR model can be used to estimate relationships from economic theory cast in supply/demand relationship. The paper addresses a very relevant issue, linking the analysis of adjustment to market equilibrium to the analysis of persistence in economic time series, with a large number of possible applications (ie partial equilibrium in different markets like labour, capital or commodity markets). It is not clear, however, whether the equilibrium defined by the author really corresponds to the structural approach economists have in mind.

Main comments

1/ While the paper addresses the issue of exogeneity, in particular strong exogeneity, it does not fully address the issue of simultaneity that routinely arises in supply/demand relationships. Indeed the supply/demand relationship is one of the basic textbook example of simultaneity, i. e. of price and quantity that are jointly determined. In that case, some of the explanatory variables are correlated with the error term, leading to non consistent estimators, hence invalidating the use of OLS. This is of course no longer the case, if the model is expressed in reduced form (the endogenous variables are expressed as a function of the exogenous variables), or if the model is expressed as a recursive system (e. g. if one of the endogenous variables enters with a lag). The paper should make clear that it addresses these issues of economic relevance.

2/ The author suggests to distinguish between long run regression and dynamic adjustment, but in order to estimate the long run relationship, it focuses on the Johansen method. In particular the use of instrumental variable methods in order to get a consistent estimator of the β coefficients should also be considered. This would not prevent from using the apparatus described in section 4 of the paper in order to study the adjustment to equilibrium, i. e. estimate adjustment mechanisms in case of discrepancy between the observed (P_t, Q_t) vector and its long run equilibrium conditional on the value of the exogenous variables.

3/ It seems that the approach suggested by the author is more applicable to reduced form equations rather than structural equations. In particular, one may wonder about identification problems in equation (4) and (5) or in (38). One may fear that it is not possible to recover the a and b coefficients. This would prevent from making an analysis of nominal rigidities, contrarily to what is indicated on second paragraph before bottom of page 12, as well as in conclusion

4/ The paper lacks an empirical application. A complete example matching the theoretical developments would indeed be more interesting than the extension to General Equilibrium, and in particular to DSGE (developments are rather general and a footnote mentioning the relevant literature would save space). Reference to the example put forward by Mc Carthy and Peach (FRBNY Economic Policy review, 2002, 2005) on the housing market could be made. It would therefore be interesting to note that is empirically difficult to estimate directly, using OLS, or the Johansen procedure, relationships of the type of (1) and (2), where P_t enters with the opposite sign in the two long run relationship with Q_t .

5/ the relationship between the authors approach and disequilibrium models, as mentioned on page 9, should be made clearer, in particular regarding estimation methods.

Minor remarks

1/ in equation (37) and (38), one could note that, in the particular example chosen ($A=I$, $k=I$ in equation (6)), $\beta_{\perp} = L$. However, the two variables differ marginally for the first row. It would be better to show that they match exactly.

2/ figure 1 duplicates with figure 2

3/ p. 25: what do you mean with “(modified) DSGE..”?