

## 1 Editor's report on "Testing for unit roots with Cointegrated data" by Robert W. Reed.

The responses to referee 1 and 2 are mostly satisfactory and I can accept them without further discussion with the exception of (2) and (11) to referee 2.

(2): That the size of the Phillip-Perron test is almost 1.0 does not seem plausible. However, it is not sufficient to ask the reader to check the correctness by enclosing the code being used as it must be your duty to check the results for mistakes. If you cannot find any, you need to convince the reader by explaining why you get this puzzling result as a result of applying a very well-known test procedure. In this case I would send the results to Peter Phillips or Pierre Peron and ask for their comments. Otherwise, I was pleased to see that you have added codes and data to be openly used by the readers of this journal.

(11): I agree with referee 2 that the paper would benefit from an additional section showing that in a unified approach there is no need to start testing for unit roots of the individual series when the ultimate purpose is a multivariate cointegration analysis. This commonly applied procedure is probably due to the original Engle-Granger *Econometrica* paper which incorrectly says that first one has to check that all variables are  $I(1)$  before doing cointegration analysis. There is absolutely no reason why one should do this. A cointegration analysis results in the following outcomes: (1) rank is full and all variables can be considered stationary, (2) rank is zero and all variables can be considered nonstationary, or rank is in between say  $r^*$ . In the latter case it is straightforward to test whether the variables individually can be accepted as a unit vector in the cointegration space. Such a variable can be considered stationary given the choice of rank in the specified model under consideration (inclusive the choice of sample period). In a unified approach like this a variable is classified as stationary/nonstationary depending on whether or not it behaves as a nonstationary variable over the sample in question. This is the only thing that matters in a multivariate analysis: if it behaves in a nonstationary manner, we can search for cointegration with another variable, if not, the variable can act as a stationary unit vector "combination" by itself.

Would this be too demanding? While I agree there exists many cointegration tests in the literature, a unified approach should preferably be based on a ML principle. In your case, the data have been simulated according to a bivariate cointegrated VAR system. Hence, the optimal ML procedure is to estimate a bivariate VAR, test for cointegration rank and if rank is 1, test whether the variables individually correspond to a

unit vector in  $\beta$  (which in your case is likely to be rejected). In this case there is no risk of obtaining inconsistent results which can easily appear when the univariate unit root tests say one thing and the cointegration tests say another.

I believe the paper would be much improved if you add a section like this based on your simulated data. If you find that this will take too much time (I do not think it will), then I suggest that as a minimum you should have a fairly detailed discussion of a "unified approach" based on a correct procedure. Such procedures are actually illustrated in many of the papers of the special issue "Using Econometrics for Assessing Economic Models" in this journal and it would be useful to make a reference to these papers.

Based on your suggested revisions and the two additions suggested above I would be pleased to accept the paper for publication in the Economics journal.

Katarina Juselius

Guest editor