Cointegration Webinar Q & A

Q: What's the difference between correlation and cointegration?

A: Correlation is a short-term property of a time series, a tendency to move in the same direction at the same time. Cointegration is a long-term property, a tendency to maintain a generalized "spread" (the cointegrating relation). Correlated variables can move far apart over time; cointegrated variables cannot.

Q: Why can't I just use the Dickey-Fuller test to see if residuals from a cointegrating regression have a unit root?

A: You can use Dickey-Fuller, or Phillips-Perron, to compute a test statistic, but the distributions change when the test series is estimated, rather than observed. For residual series, you need to use the distributions tabulated in EGCITEST.

Q: The Johansen test seems much more complicated than the Engle-Granger test. Why should I even consider it?

A: It's important to remember that there is no single "Johansen test." There is a Johansen *framework* that encompasses testing different models of cointegration, VECM estimation, and testing model restrictions. The many parameter/value settings of JCITEST and JCONTEST allow you to carry out a comprehensive cointegration analysis in a consistent setting. Engle-Granger only tests and estimates a single cointegrating relation.

Q: How important is it to capture cointegration when forecasting?

A: If cointegration is present in a system, failure to model it is a misspecification that will produce poor long-term forecasts. There is some evidence that an unrestricted VAR using stationary series (levels or differences, as appropriate) will perform comparably over the short-term. The answer really depends on the forecast horizon.

Q: How do cointegration capabilities in Econometrics Toolbox compare with other software?

A: It's relatively easy to implement an Engle-Granger or Johansen test with just a few preset options for test statistics, models, etc. You may also see implementations that alter the original descriptions of the algorithms in some unaccountable way, under the hood. Econometrics Toolbox offers a complete implementation of the cointegration testing frameworks in an open-source setting that is faithful to original sources.