Panel cointegration tests pdf

Volume 50, July 2015, Pages 359-363 Panel coin testingThe general interest and availability of panel data have led to an emphasis on the extension of different statistical tests to panel data. Recent literature focuses on coin tests in the panel environment. EViews will calculate one of the following types of tests with panel coins: Pedroni (1999), Pedroni (2004), As (1999) and Fisher's test using the underlying Johansen methodology (Maddala and Wu 1999). Performing coin panel tests at EViewsYou can perform a coin test using a pool object or group in the working foil panel settings. Here we focus on the panel setting; Conducting a pool coin test only includes minor differences in specification (see Conducting coin tests to discuss testing in a pooled aggregate dataset). To test the coins on the board using the group object, you should first make sure that they are in the work foil structured on the panel (Working with panel data). If you have a single-section work foil in the sample, you can perform one of the standard tests with single equation coins using a subsample. Then open the EViews group that contains a range of interests and select view the coin dialog. The opt-out menu at the top of the dialog box allows you to choose between three types of tests: Pedroni (Engle-Granger-based), As (Engle-Granger-based) Fisher (combined Johansen). As you select different types of testing, the rest of the dialog will change to introduce you different options. Here we see options associated with the Pedroni test. (Note, for example, the Pedroni test will only be available for groups that contain seven or fewer batches.) The customizable options associated with Pedroni and As Tests are very similar to the options found in the Panel Root Testing (Panel Testing). Part of the dialogue determines the exogenous regressors that will be involved in second-degree regression. You should choose Individual Interception if you want to include individual fixed effects, individual interception, and individual trend if you want to include both individual fixed effects and trends or without interception or trend that does not involve regressors. As a test allows only. The section is used to determine the number of lag that will be included in second-degree regression. If you select EViews will determine the optimal delay using the information criteria specified in the opt-out menu (,). In addition, you can provide the maximum delay that will be used in automatic selection. An empty field will instruct EViews to calculate the maximum lag for each cross-section based on the number of observations. The default maximum lag length for cross-section is calculated as:where the cross-sectional length is . Alternatively, you can provide your own value by selecting the specified user and entering a value in the edit field. The Pedroni test uses both a parametric and non-parametric core long-term deviation. You can also use parts to control the calculation of variance parametric assessors. Part of the dialog allows you to specify settings for nonparameter assessment. You can choose from several types of grains (Bartlett, Parzen, Quadratic spectral) and determine how bandwidth will be selected (Newey-West automatic, , stated user). Newey-West fixed bandwidth gives. Use the dialog as a test as described below. Here we see options for selecting the Fisher test. These options are similar to the options available in the Johansen Coin Test (Johansen Cointegration Test). The deterministic section of trend specification determines the type of exogenous trend to be used. Section Lag intervals determines the lag-par to be used in the assessment. Panel Cointegration DetailsHere, we provide a brief description of the coin tests supported by EViews. Pedroni and As tests are based on Engle-Granger (1987) tests of two-step coins (based on leftovers). Fisher's test is a combined Johansen test. Pedroni (Engle-Granger based) Cointegration Tests Engle-Granger (1987) test coins based on a test of the remnants of false regression performed using I(1) variables. If the variables match, the residues should be I(0). On the other hand, if the variables do not match, then the remains will be I(1). Pedroni (1999, 2004) and As (1999) expand the Engle-Granger framework to tests involving panel data. Pedroni suggests several coin tests that allow heterogeneous interceptions and cross-sectional trend coefficients. Consider the following regression (54:6)for; where they are presumed to be integrated into the front row, e.g. Parameters and are individual and trend effects that can be set to zero as desired. According to the zero hypothesis that there are no coins, the remains will be I(1). The general approach is to obtain residues from the Equation (54,6) and then test whether the residues I(1) are by initiating ancillary regression,(54,7)or (54,8)for each cross-section. Pedroni describes different methods of constructing statistics to test the low-level hypothesis that there are no coins (). There are two alternative hypotheses: a homogeneous alternative to all (which Pedroni calls an intra-dimension test or a test panel statistics) and a heterogeneous alternative for all (also called a test between dimensions or group statistics). Pedroni panel coin statistics are made from residues from the equation (54.7) or equation (54,8). A total of eleven statistics are generated with varying degrees of properties (size and power for different i). Pedroni shows that standardized statistics are asymptomatically distributed (54.9) where and whether Monte Carlo has generated adjustment conditions. The details for these calculations can be found in the original (Engle-Granger-based) Cointegration TestsThe as a test follows the same basic approach as Pedroni tests, but lists a cross-section of specific interception and homogeneous coefficients on first-stage regressors. In the bivariable case described in As (1999), we have(54.10)for(54.11)(54.12)for ; More generally, we can consider starting the first phase of the regression equation (54,6), requiring it to be heterogeneous, homogeneous across the cross-section and setting all trend coefficients to zero. As then, it initiates either a combined auxiliary regression(54,13)or an extended version of the aggregated specification,(54,14)Under non-coin-free, As shown, the following statistics(54,15)(54,16)(54,17)(54,18)and for (i.e. extended version)(54,19) converge into asymptomatic, where variance with estimated long-term deviation is estimated. The covariation of (54.20)is estimated at (54.21), and long-term covariation is estimated using the usual kernel assessor (54.22) where one of the supported core functions and bandwidth is. The combined individual tests (Fisher/Johansen)Fisher (1932) perform a combined test that uses the results of individual tests. Maddala and Wu (1999) use Fisher's score to suggest an alternative approach to cointegration testing in panel data by combining tests from individual cross-sections to get the test statistics for the entire panel. If the p-value from the individual cross-section coin test is then under the zero panel hypothesis(54.23)By default, EViews reports a value based on MacKinnon-Haug-Michelis (1999) p-values for the Johansen coin trace test and maximum test eigenvalue. ORDER STATA stands out as panel-data cointegration test Dickey-Fuller Modified Dickey-Fuller Extended Dickey-Fuller Misfit Dickey-Fuller Misfit Modified Dickey-Fuller Pedroni Panel-Data Cointe Mr. Phillips-Perron Modified Phillips-Perron Augmented Dickey-Fuller Westerlund panel-data cointegration test Researchers perform coin tests when time series are stationary to determine whether they have a stable, long-term bond. xtcointtest conducts various tests for data containing many long plates, known as the big-N big T case. Think about the long series about buying a supermarket for a large number of shoppers. Or consider repeated site visits by site subscribers. Time series are said to be stationary when they have a medium or variability that varies over time. Some non-present time series are stationary if you change them first. Innoticed weather series tend to roam. Cointegration says they wander together, which means there is a long-term balance of relationships between the series. And in Stati, we can test on cointegration using xtcointtest commands. xtcointtest tests for the presence of this long-term relationship with coins. There are three tests available: Like, Pedroni and Westerlund. Show me what else we've got. and want to assess the long-term link between house prices, neighbouring house prices and average house prices in each area. We believe that the housing market is volatile - that it is not stable - that the time series has the root of the unit - but we also believe that prices have a stable long-term relationship. Here is a graph that seems to support our belief: To test our intuition, we perform an Im-Pesaran-Shin unit-root test for the series. This is not part of the kstcointtest that we want to show you, but first we need to do a test of the unit's root. We don't think we can dismiss the zero hypothesis that the panels have unit roots. . xtunitroot ips hprice Ho: All panels contain unit roots Number of panels = 700 Ha: Some panels are stationary Number of periods = 500 AR parameter: Panel-specific asymptotics: T,N -> Infinity Panel means: Included sequential time trend: ADF regression included: No delays included Fixed-N exact critical values Statistics p-value 1% 5% 10% t-bar -0.7598 -1.7 30 -1.670 -1.640 t-tilde-bar -0.7582 Z-t-tilde-bar 24.2109 1.0000 We have three prices in our data : hprice, e.g. and aprice. We only showed you the HPrice test, but we tested all three prices and got similar results. Unit roots in the hand, now we perform as cointegration test: . xtcointtest as hprice aprice nprice As test for cointegration Ho: No cointegration Number of panels = 700 Ha: All panels are cointegrted Number of periods = 498 Cointegrating vector: Same panel means: Included Kernel: Bartlett Time trend: Not included Lags: 3.54 (Newey-West) AR parameter: Same extended backlapse: 1 Stats p-value Modified Dickey-Fuller t -1690.966 0.0 Dickey-Fuller t -533.2073 0.0000 Extended Dickey-Fuller t -362.3249 0.0000 Misfits Modified Dickey-Fuller t -4106.424 0.0000 Misfit Dickey-Fuller t -624.8698 0.0000 Non-harmful hypothesis about penniless is rejected. This is true for the five test statistics reported in the table and provides solid evidence that all the panels in the data were coined. Don't give up, let's do some more tests. We want to show you other xtcointtest features, and in any case, the reviewer can ask if the above results are robust. xtcointtest has just reported five statistics, but all are related. . xtcointtest pedroni hprice aprice nprice Pedroni test for cointegration Ho: No cointegration Number of panels = 700 Ha: All panels are cointegrted Number of periods = 499 Cointegrating vector: Panel specific Panel means: Included Kernel: Bartlett Time trend: Not included Lags: 5.00 (Newey-West) AR parameter: PanelEd specific Augmented lags: 5.00 (Newey-West) AR 1 Statistics p-value Modified Phillips-Perron t -1779.0263 0.0000 Phillips-Perron t -675.1867 0.0000 Extended Dickey-Fuller t -674.2714 0.0000 These related tests coginteration work differently , but they allow us to come to the same conclusion : the panels are coined. Westerlund test another approach, one that imposes fewer restrictions. It's a the same non-harmful hypothesis, but the alternative hypothesis is different, namely, that some (not necessarily all) panels are coined. . xtcointtest westerlund hprice aprice nprice Westerlund test for cointegration Ho: No cointegration Number of panels = 700 Ha: Some panels are coined Number of periods = 500 CoIntegrating vector: Panel specific Panel means: Time trend included: Not included AR parameter: Panel specific Statistic p-value Variance ratio -30.6619 0.0000 This test also rejects null. Tell me more Learn more about Statine panel data features. See the [XT] xtcointtest for more information. Information.