

**Package Name:** BPTTEST

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**Date:** 2010/11/23 (revised: 2012/05/10)

**Add-in Type:** Equation

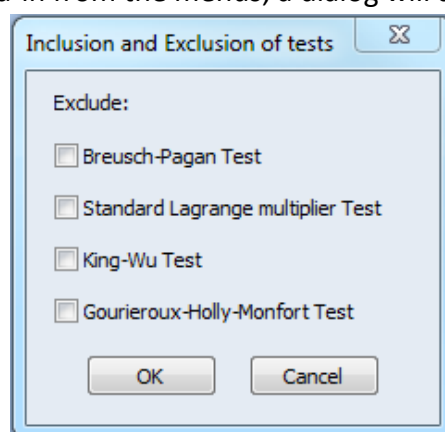
**Default Proc Name:** bptest

**Default Menu Text:** Breusch-Pagan LM test for random effects

**Description:** This add-in provides a variety of Lagrange Multiplier (LM) tests for panel data models, as described in "Econometric Analysis of Panel Data" by Badi H. Baltagi (2008, pp. 63-67 and pp.193-196).

The main output of this add-in is an EViews table which contains the test statistics studied in Breusch-Pagan (BP; 1980), Honda (Honda; 1985), King and Wu (KW; 1997), Moulton and Randolph (SLM; 1989), Gourieroux, Holly, and Monfort (GHM; 1982). Note that all statistics are calculated in a manner robust to unbalanced panels.

**Dialog:** Upon running the add-in from the menus, a dialog will appear:



You are expected to select unlikely tests which can be excluded in the procedure (the default calculates all test statistics). It is worth noting that the Standard Lagrange multiplier test may require extensive computations. If the add-in causes an out of memory error, or takes an excessively long time to complete, run the add-in with the "noSLM" option. This can be done via the command line form of the add-in only.

**Command Line:**

*Syntax:* equation\_name.bptest(options)

*Options:*

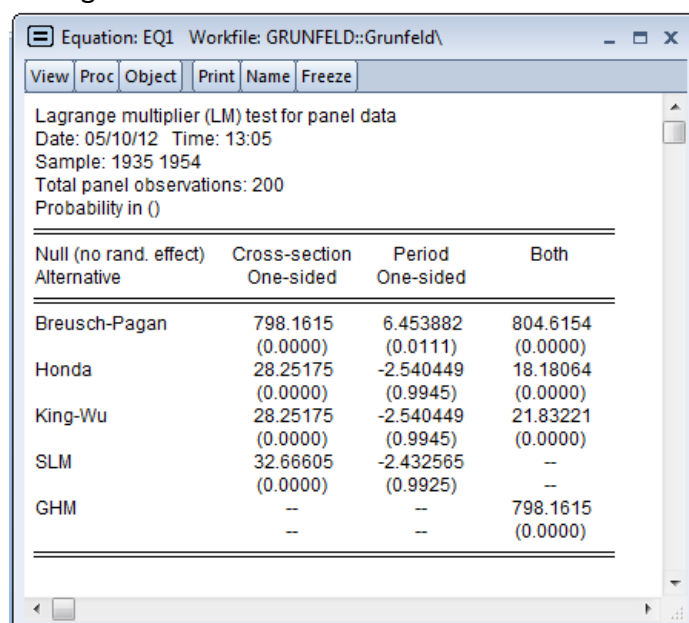
Argument	Explanation
noBP	Exclude Breusch-Pagan test
noHonda	Exclude Honda test
noKW	Exclude King-Wu test
noSLM	Exclude Standard Lagrange multiplier test
noGHM	Exclude Gourieroux-Holly-Monfort test

### Examples:

By using the Grunfeld example explained on the page 69 of Baltagi (2008),

*eq1.bptest*

will generate the following EViews table:



The screenshot shows the EViews software interface with the 'Equation: EQ1' window. The title bar indicates the workfile is 'GRUNFELD::Grunfeld\'. The menu bar includes 'View', 'Proc', 'Object', 'Print', 'Name', and 'Freeze'. The main text area displays the following information:

Lagrange multiplier (LM) test for panel data  
Date: 05/10/12 Time: 13:05  
Sample: 1935 1954  
Total panel observations: 200  
Probability in ()

Null (no rand. effect) Alternative	Cross-section One-sided	Period One-sided	Both
Breusch-Pagan	798.1615 (0.0000)	6.453882 (0.0111)	804.6154 (0.0000)
Honda	28.25175 (0.0000)	-2.540449 (0.9945)	18.18064 (0.0000)
King-Wu	28.25175 (0.0000)	-2.540449 (0.9945)	21.83221 (0.0000)
SLM	32.66605 (0.0000)	-2.432565 (0.9925)	-- --
GHM	-- --	-- --	798.1615 (0.0000)

The results can be summarized as follows: The null hypothesis  $H_0$ : zero cross-section variances, as well as  $H_0$ : zero cross-section variances and/or zero period variances, are rejected by all tests considered. However, the one-sided tests for  $H_0$ : zero period variances cannot reject the null.

### Reference:

Baltagi, B.H. (2008) "Econometrics Analysis of Panel Data," Wiley, 4<sup>th</sup> edition.

Breusch, T.S. and A.R. Pagan (1980) "The Lagrange multiplier test and its applications to model specification in econometrics," *Review of Economic Studies* 47, 239-253.

Gourieroux, C., A. Holly and A. Monfort (1982) "Likelihood ratio test, Wald test, and Kuhn-Tucker test in linear models with inequality constraints on the regression parameters," *Econometrica* 50, 63-80.

Hond, Y. (1985) "Testing the error components model with non-normal disturbances," *Review of Economic Studies* 52, 681-690.

King, M.L. and P.X. Wu (1997) "Locally Optimal One Sided Tests for Multiparameter Hypotheses," *Econometric Review* 16, 131-156.

Moulton, B.R. and W.C. Randolph (1989) "Alternative tests of the error components model," *Econometrica* 57, 685-693.