

HASIL OLAHAN DATA PENELITIAN

1. Uji Stasioneritas First Difference

Panel unit root test: Summary

Series: D(PV)

Date: 07/04/22 Time: 19:55

Sample: 2010 2021

Exogenous variables: Individual effects

User-specified lags: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-33.2388	0.0000	57	568
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-16.7393	0.0000	57	568
ADF - Fisher Chi-square	407.781	0.0000	57	568
PP - Fisher Chi-square	444.109	0.0000	57	568

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(GR)

Date: 07/04/22 Time: 19:54

Sample: 2010 2021

Exogenous variables: Individual effects

User-specified lags: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-80.7168	0.0000	57	568
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-21.9594	0.0000	57	568
ADF - Fisher Chi-square	334.276	0.0000	57	568
PP - Fisher Chi-square	355.836	0.0000	57	568

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(HC)

Date: 07/04/22 Time: 19:55

Sample: 2010 2021

Exogenous variables: Individual effects

User-specified lags: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-35.2548	0.0000	57	568
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-18.1462	0.0000	57	568
ADF - Fisher Chi-square	415.434	0.0000	57	568
PP - Fisher Chi-square	425.139	0.0000	57	568

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(BL)

Date: 07/04/22 Time: 20:04

Sample: 2010 2021

Exogenous variables: Individual effects

User-specified lags: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-22.1550	0.0000	57	568
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-13.5271	0.0000	57	568
ADF - Fisher Chi-square	367.196	0.0000	57	568
PP - Fisher Chi-square	417.736	0.0000	57	568

Dependent Variable: LOG(PV)

Method: Panel Least Squares

Date: 07/04/22 Time: 20:52

Sample: 2010 2021

Periods included: 12

Cross-sections included: 57

Total panel (unbalanced) observations: 682

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.008161	0.370133	8.127254	0.0000
LOG(GR)	-0.385416	0.045894	-8.397881	0.0000
LOG(HC)	0.019632	0.063435	0.309483	0.7570
LOG(BL)	0.208818	0.062631	3.334111	0.0009
R-squared	0.115299	Mean dependent var	3.276762	
Adjusted R-squared	0.111384	S.D. dependent var	0.770684	
S.E. of regression	0.726496	Akaike info criterion	2.204680	
Sum squared resid	357.8458	Schwarz criterion	2.231220	
Log likelihood	-747.7958	Hannan-Quinn criter.	2.214951	
F-statistic	29.45347	Durbin-Watson stat	0.122019	
Prob(F-statistic)	0.000000			

Dependent Variable: LOG(PV)

Method: Panel Least Squares

Date: 07/04/22 Time: 20:36

Sample: 2010 2021

Periods included: 12

Cross-sections included: 57

Total panel (unbalanced) observations: 682

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.280602	0.190269	17.24187	0.0000
LOG(GR)	-0.056683	0.040596	-1.396270	0.1631
LOG(HC)	-0.463900	0.062907	-7.374401	0.0000
LOG(BL)	0.153061	0.033567	4.559816	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.830760	Mean dependent var	3.276762
Adjusted R-squared	0.814707	S.D. dependent var	0.770684
S.E. of regression	0.331746	Akaike info criterion	0.714968
Sum squared resid	68.45435	Schwarz criterion	1.113064
Log likelihood	-183.8040	Hannan-Quinn criter.	0.869040
F-statistic	51.75025	Durbin-Watson stat	0.510640
Prob(F-statistic)	0.000000		

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

2. Uji Kointegrasi

Panel unit root test: Summary

Series: ECT2

Date: 07/04/22 Time: 20:58

Sample: 2010 2021

Exogenous variables: Individual effects

User-specified lags: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-17.8936	0.0000	57	625
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.67103	0.0038	57	625
ADF - Fisher Chi-square	146.791	0.0209	57	625
PP - Fisher Chi-square	172.429	0.0003	57	625

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

3. Estimasi Model Jangka Pendek

a. Model CEM

Dependent Variable: LOG(PV)

Method: Panel Least Squares

Date: 07/04/22 Time: 21:16

Sample: 2010 2021

Periods included: 12

Cross-sections included: 57

Total panel (unbalanced) observations: 682

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.008161	0.370133	8.127254	0.0000
LOG(GR)	-0.385416	0.045894	-8.397881	0.0000
LOG(HC)	0.019632	0.063435	0.309483	0.7570
LOG(BL)	0.208818	0.062631	3.334111	0.0009
R-squared	0.115299	Mean dependent var	3.276762	
Adjusted R-squared	0.111384	S.D. dependent var	0.770684	
S.E. of regression	0.726496	Akaike info criterion	2.204680	
Sum squared resid	357.8458	Schwarz criterion	2.231220	
Log likelihood	-747.7958	Hannan-Quinn criter.	2.214951	
F-statistic	29.45347	Durbin-Watson stat	0.122019	
Prob(F-statistic)	0.000000			

b. Model FEM

Dependent Variable: LOG(PV)
Method: Panel Least Squares
Date: 07/04/22 Time: 21:17
Sample: 2010 2021
Periods included: 12
Cross-sections included: 57
Total panel (unbalanced) observations: 682

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.280602	0.190269	17.24187	0.0000
LOG(GR)	-0.056683	0.040596	-1.396270	0.1631
LOG(HC)	-0.463900	0.062907	-7.374401	0.0000
LOG(BL)	0.153061	0.033567	4.559816	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.830760	Mean dependent var	3.276762	
Adjusted R-squared	0.814707	S.D. dependent var	0.770684	
S.E. of regression	0.331746	Akaike info criterion	0.714968	
Sum squared resid	68.45435	Schwarz criterion	1.113064	
Log likelihood	-183.8040	Hannan-Quinn criter.	0.869040	
F-statistic	51.75025	Durbin-Watson stat	0.510640	
Prob(F-statistic)	0.000000			

c. Model REM

Dependent Variable: LOG(PV)
Method: Panel EGLS (Cross-section random effects)
Date: 07/04/22 Time: 21:17
Sample: 2010 2021
Periods included: 12
Cross-sections included: 57
Total panel (unbalanced) observations: 682
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.283846	0.208265	15.76765	0.0000
LOG(GR)	-0.084991	0.039327	-2.161125	0.0310
LOG(HC)	-0.415329	0.060253	-6.893106	0.0000
LOG(BL)	0.151436	0.033320	4.544922	0.0000
Effects Specification				
		S.D.	Rho	
Cross-section random		0.651160	0.7939	
Idiosyncratic random		0.331746	0.2061	
Weighted Statistics				
R-squared	0.114279	Mean dependent var	0.477472	
Adjusted R-squared	0.110360	S.D. dependent var	0.353702	
S.E. of regression	0.333530	Sum squared resid	75.42247	
F-statistic	29.15932	Durbin-Watson stat	0.465637	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.026757	Mean dependent var	3.276762	
Sum squared resid	393.6595	Durbin-Watson stat	0.089213	

4. Uji spesifikasi Model Jangka Pendek

a. Uji Chow

Redundant Fixed Effects Tests

Equation: MODEL PANEL2

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	46.955556	(56,622)	0.0000
Cross-section Chi-square	1127.983696	56	0.0000

Cross-section fixed effects test equation:

Dependent Variable: LOG(PV)

Method: Panel Least Squares

Date: 07/04/22 Time: 21:20

Sample: 2010 2021

Periods included: 12

Cross-sections included: 57

Total panel (unbalanced) observations: 682

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.008161	0.370133	8.127254	0.0000
LOG(GR)	-0.385416	0.045894	-8.397881	0.0000
LOG(HC)	0.019632	0.063435	0.309483	0.7570
LOG(BL)	0.208818	0.062631	3.334111	0.0009
R-squared	0.115299	Mean dependent var		3.276762
Adjusted R-squared	0.111384	S.D. dependent var		0.770684
S.E. of regression	0.726496	Akaike info criterion		2.204680
Sum squared resid	357.8458	Schwarz criterion		2.231220
Log likelihood	-747.7958	Hannan-Quinn criter.		2.214951
F-statistic	29.45347	Durbin-Watson stat		0.122019
Prob(F-statistic)	0.000000			

b. Uji Hausman

Correlated Random Effects - Hausman Test

Equation: MODEL PANEL2

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.468453	3	0.0150

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LOG(GR)	-0.056683	-0.084991	0.000101	0.0049
LOG(HC)	-0.463900	-0.415329	0.000327	0.0072
LOG(BL)	0.153061	0.151436	0.000017	0.6896

Cross-section random effects test equation:

Dependent Variable: LOG(PV)

Method: Panel Least Squares

Date: 07/04/22 Time: 21:18

Sample: 2010 2021
 Periods included: 12
 Cross-sections included: 57
 Total panel (unbalanced) observations: 682

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.280602	0.190269	17.24187	0.0000
LOG(GR)	-0.056683	0.040596	-1.396270	0.1631
LOG(HC)	-0.463900	0.062907	-7.374401	0.0000
LOG(BL)	0.153061	0.033567	4.559816	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.830760	Mean dependent var	3.276762
Adjusted R-squared	0.814707	S.D. dependent var	0.770684
S.E. of regression	0.331746	Akaike info criterion	0.714968
Sum squared resid	68.45435	Schwarz criterion	1.113064
Log likelihood	-183.8040	Hannan-Quinn criter.	0.869040
F-statistic	51.75025	Durbin-Watson stat	0.510640
Prob(F-statistic)	0.000000		

c. Uji LM

Lagrange Multiplier Tests for Random Effects

Null hypotheses: No effects

Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided
(all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	2188.659 (0.0000)	5.127056 (0.0236)	2193.786 (0.0000)
Honda	46.78311 (0.0000)	-2.264300 --	31.47955 (0.0000)
King-Wu	46.78311 (0.0000)	-2.264300 --	16.88812 (0.0000)
Standardized Honda	48.13183 (0.0000)	-2.152636 --	27.44719 (0.0000)
Standardized King-Wu	48.13183 (0.0000)	-2.152636 --	13.30486 (0.0000)
Gourieriou, et al.*	--	--	2188.659 (< 0.01)

*Mixed chi-square asymptotic critical values:

1%	7.289
5%	4.321
10%	2.952

5. Estimasi Model Jangka Panjang

a. Model CEM

Dependent Variable: D(LOG(PV))

Method: Panel Least Squares

Date: 07/04/22 Time: 20:56

Sample (adjusted): 2011 2021
 Periods included: 11
 Cross-sections included: 57
 Total panel (unbalanced) observations: 625

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007055	0.008279	0.852114	0.3945
D(LOG(GR))	0.018951	0.034118	0.555449	0.5788
D(LOG(HC))	-0.540799	0.054746	-9.878251	0.0000
D(LOG(BL))	0.073572	0.019342	3.803823	0.0002
ECT2	0.267365	0.027004	9.900956	0.0000
R-squared	0.256641	Mean dependent var		0.007380
Adjusted R-squared	0.251845	S.D. dependent var		0.239243
S.E. of regression	0.206935	Akaike info criterion		-0.304851
Sum squared resid	26.54983	Schwarz criterion		-0.269349
Log likelihood	100.2661	Hannan-Quinn criter.		-0.291057
F-statistic	53.51297	Durbin-Watson stat		1.836566
Prob(F-statistic)	0.000000			

a. Model FEM

Dependent Variable: D(LOG(PV))
 Method: Panel Least Squares
 Date: 07/04/22 Time: 20:57
 Sample (adjusted): 2011 2021
 Periods included: 11
 Cross-sections included: 57
 Total panel (unbalanced) observations: 625

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007129	0.008322	0.856630	0.3920
D(LOG(GR))	0.025384	0.035653	0.711975	0.4768
D(LOG(HC))	-0.543924	0.056844	-9.568771	0.0000
D(LOG(BL))	0.069736	0.019519	3.572703	0.0004
ECT2	0.248416	0.027351	9.082496	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.316776	Mean dependent var		0.007380
Adjusted R-squared	0.244093	S.D. dependent var		0.239243
S.E. of regression	0.208005	Akaike info criterion		-0.210008
Sum squared resid	24.40204	Schwarz criterion		0.223117
Log likelihood	126.6274	Hannan-Quinn criter.		-0.041710
F-statistic	4.358298	Durbin-Watson stat		2.036554
Prob(F-statistic)	0.000000			

b. Model REM

Dependent Variable: D(LOG(PV))
 Method: Panel EGLS (Cross-section random effects)
 Date: 07/04/22 Time: 20:57
 Sample (adjusted): 2011 2021
 Periods included: 11
 Cross-sections included: 57
 Total panel (unbalanced) observations: 625
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007055	0.008322	0.847733	0.3969

D(LOG(GR))	0.018951	0.034294	0.552593	0.5807
D(LOG(HC))	-0.540799	0.055029	-9.827464	0.0000
D(LOG(BL))	0.073572	0.019442	3.784267	0.0002
ECT2	0.267365	0.027144	9.850053	0.0000
Effects Specification				
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			0.208005	1.0000
Weighted Statistics				
R-squared	0.256641	Mean dependent var		0.007380
Adjusted R-squared	0.251845	S.D. dependent var		0.239243
S.E. of regression	0.206935	Sum squared resid		26.54983
F-statistic	53.51297	Durbin-Watson stat		1.836566
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.256641	Mean dependent var		0.007380
Sum squared resid	26.54983	Durbin-Watson stat		1.836566

6. Uji Spesifikasi Model Jangka Panjang

a. Uji Chow

Redundant Fixed Effects Tests
Equation: MODEL PANEL2
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.886451	(56,564)	0.7065
Cross-section Chi-square	52.722667	56	0.5997

Cross-section fixed effects test equation:
Dependent Variable: D(LOG(PV))
Method: Panel Least Squares
Date: 07/04/22 Time: 21:05
Sample (adjusted): 2011 2021
Periods included: 11
Cross-sections included: 57
Total panel (unbalanced) observations: 625

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007055	0.008279	0.852114	0.3945
D(LOG(GR))	0.018951	0.034118	0.555449	0.5788
D(LOG(HC))	-0.540799	0.054746	-9.878251	0.0000
D(LOG(BL))	0.073572	0.019342	3.803823	0.0002
ECT2	0.267365	0.027004	9.900956	0.0000
R-squared	0.256641	Mean dependent var		0.007380
Adjusted R-squared	0.251845	S.D. dependent var		0.239243
S.E. of regression	0.206935	Akaike info criterion		-0.304851
Sum squared resid	26.54983	Schwarz criterion		-0.269349
Log likelihood	100.2661	Hannan-Quinn criter.		-0.291057
F-statistic	53.51297	Durbin-Watson stat		1.836566
Prob(F-statistic)	0.000000			

b. Uji Haussman

Correlated Random Effects - Hausman Test
Equation: MODEL PANEL2
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	36.986210	4	0.0000

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
D(LOG(GR))	0.025384	0.018951	0.000095	0.5093
D(LOG(HC))	-0.543924	-0.540799	0.000203	0.8264
D(LOG(BL))	0.069736	0.073572	0.000003	0.0274
ECT2	0.248416	0.267365	0.000011	0.0000

Cross-section random effects test equation:

Dependent Variable: D(LOG(PV))

Method: Panel Least Squares

Date: 07/04/22 Time: 21:04

Sample (adjusted): 2011 2021

Periods included: 11

Cross-sections included: 57

Total panel (unbalanced) observations: 625

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007129	0.008322	0.856630	0.3920
D(LOG(GR))	0.025384	0.035653	0.711975	0.4768
D(LOG(HC))	-0.543924	0.056844	-9.568771	0.0000
D(LOG(BL))	0.069736	0.019519	3.572703	0.0004
ECT2	0.248416	0.027351	9.082496	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.316776	Mean dependent var	0.007380
Adjusted R-squared	0.244093	S.D. dependent var	0.239243
S.E. of regression	0.208005	Akaike info criterion	-0.210008
Sum squared resid	24.40204	Schwarz criterion	0.223117
Log likelihood	126.6274	Hannan-Quinn criter.	-0.041710
F-statistic	4.358298	Durbin-Watson stat	2.036554
Prob(F-statistic)	0.000000		

c. Uji LM

Lagrange Multiplier Tests for Random Effects

Null hypotheses: No effects

Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.448334 (0.5031)	0.484445 (0.4864)	0.932780 (0.3341)
Honda	-0.669578 --	-0.696021 --	-0.965624 --

King-Wu	-0.669578 --	-0.696021 --	-0.901780 --
Standardized Honda	-0.603494 --	-0.510214 --	-6.695886 --
Standardized King-Wu	-0.603494 --	-0.510214 --	-5.321558 --
Gourieriou, et al.*	--	--	0.000000 (>= 0.10)

*Mixed chi-square asymptotic critical values:

1%	7.289
5%	4.321
10%	2.952
