Hasil Regresi Data Panel

1. Model *Common Effect/Pooled Least Square(PLS)*

Dependent Variable: LOG(D?)
Method: Pooled EGLS (Cross-section weights)
Date: 05/08/10   Time: 08:03
Sample: 2002 2008
Included observations: 7
Cross-sections included: 30
Total pool (balanced) observations: 210
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.250207	1.202242	-3.535235	0.0005
LOG(P?)	-0.144382	0.209303	-0.689825	0.4911
LOG(JP?)	0.762087	0.016577	45.97189	0.0000
LOG(PDRBI?)	0.593403	0.021336	27.81261	0.0000
LOG(HS?)	0.079039	0.028418	2.781321	0.0059

Weighted Statistics			
R-squared	0.993352	Mean dependent var	21.94482
Adjusted R-squared	0.993222	S.D. dependent var	50.19744
S.E. of regression	0.846912	Sum squared resid	147.0384
F-statistic	7657.757	Durbin-Watson stat	0.399443
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.874817	Mean dependent var	4.773823
Sum squared resid	156.4334	Durbin-Watson stat	0.089821

2. Model *Fixed Effect*

Dependent Variable: LOG(D?)
Method: Pooled EGLS (Cross-section weights)
Date: 05/08/10   Time: 08:05
Sample: 2002 2008
Included observations: 7
Cross-sections included: 30
Total pool (balanced) observations: 210
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.325405	0.225678	-1.441898	0.1511
LOG(P?)	-0.028141	0.008139	-3.457540	0.0007
LOG(JP?)	0.063100	0.034303	1.839502	0.0675
LOG(PDRBI?)	0.547780	0.057032	9.604788	0.0000
LOG(HS?)	0.058873	0.012847	4.582694	0.0000
Fixed Effects (Cross)				
_JABAR--C	2.552661			
_JATIM--C	2.326946			
_DKI--C	2.458073			
_BANTEN--C	2.405320			
_JATENG--C	1.819447			
_SUMUT--C	1.471332			
_SUMBAR--C	1.602060			
_SELSELBAR--C	1.229917			
_SUMSEL--C	0.642568			
_LAMPUNG--C	0.730189			
_DIY--C	0.588082			
_KALSEL--C	0.566754			
_KALTIM--C	-0.985570			
_RIAU--C	0.001115			
_BALI--C	-0.127202			
_SULUT--C	0.036096			
_KALBAR--C	-0.551926			
_JAMBI--C	-0.292960			
_NAD--C	-1.462747			
_SULTENGGARA--C	-0.688966			
_BABEL--C	-1.217211			
_BENGKULU--C	-0.470508			
_KALTENG--C	-1.062883			
_SULTENG--C	-1.237911			
_NTB--C	-1.694370			
_GORONTALO--C	-0.620278			
_NTT--C	-1.114299			
_PAPUA--C	-2.257431			
_MALUKU--C	-1.318379			
_MALUT--C	-3.327921			

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.999090	Mean dependent var	11.89272
Adjusted R-squared	0.998919	S.D. dependent var	13.88284
S.E. of regression	0.174812	Sum squared resid	5.378432
F-statistic	5855.569	Durbin-Watson stat	1.322115
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.994937	Mean dependent var	4.773823
Sum squared resid	6.327085	Durbin-Watson stat	1.211485

3. Model *Random Effect*

Dependent Variable: LOG(D?)
Method: Pooled EGLS (Cross-section random effects)
Date: 05/08/10   Time: 08:08
Sample: 2002 2008
Included observations: 7
Cross-sections included: 30
Total pool (balanced) observations: 210
Swamy and Arora estimator of component variances
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.825720	0.551520	-6.936686	0.0000
LOG(P?)	-0.024215	0.035559	-0.680976	0.4967
LOG(JP?)	0.320891	0.116315	2.758818	0.0063
LOG(PDRBI?)	0.844707	0.127764	6.611452	0.0000
LOG(HS?)	0.003914	0.021546	0.181636	0.8560
Random Effects (Cross)				
_JABAR--C	0.672751			
_JATIM--C	0.538944			
_DKI--C	0.775725			
_BANTEN--C	1.605954			
_JATENG--C	0.396368			
_SUMUT--C	0.320081			
_SUMBAR--C	1.596767			
_SELSELBAR--C	0.795466			
_SUMSEL--C	0.377390			
_LAMPUNG--C	0.802156			
_DIY--C	0.618134			
_KALSEL--C	0.525578			
_KALTIM--C	-1.551996			
_RIAU--C	-0.658578			
_BALI--C	-0.127258			
_SULUT--C	0.339317			
_KALBAR--C	-0.639328			
_JAMBI--C	0.061418			
_NAD--C	-1.884920			

_SULTENGGARA--C	0.036042
_BABEL--C	-0.760101
_BENGKULU--C	0.871584
_KALTENG--C	-0.465978
_SULTENG--C	-0.665251
_NTB--C	-0.957089
_GORONTALO--C	0.604970
_NTT--C	0.065461
_PAPUA--C	-1.510286
_MALUKU--C	0.133306
_MALUT--C	-1.916625

Effects Specification		
	S.D.	Rho
Cross-section random	0.888940	0.9578
Idiosyncratic random	0.186480	0.0422

Weighted Statistics			
R-squared	0.510420	Mean dependent var	0.377326
Adjusted R-squared	0.500867	S.D. dependent var	0.269573
S.E. of regression	0.190452	Sum squared resid	7.435733
F-statistic	53.43151	Durbin-Watson stat	1.142111
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.853094	Mean dependent var	4.773823
Sum squared resid	183.5792	Durbin-Watson stat	0.046260

Pemilihan Model *Fixed Effect* dan *Common Effect*

a. Uji Restricted F

$H_0 : \alpha_1 = \alpha_2 = \ldots = \alpha_n$ (*common effect*)

$H_1 : \alpha_1 \neq \alpha_2 \neq \ldots \neq \alpha_n$ (*fixed effect*)

$$F = \frac{(RSS_1 - RSS_2)/m}{RSS_2/(n-k)}$$

dimana:

RSS_1 : *Residual sum of Square* dari model *common effect* = 147.0384

RSS_2 : *Residual sum of Squares* dari model *fixed effect* = 5.378432

m : jumlah linier *restriction* = 5

n : jumlah observasi = I x t = 210

k : jumlah parameter dalam model *fixed effect* = 5

$$F_{hitung} = \frac{(147.0384 - 5.378432)/5}{5.378432/205} = 1.079,88$$

$$F_{tabel} = F_{0,05,\,5,\,210} = 2,5$$

Jadi, kesimpulannya adalah tolak H_0, karena F hitung > F tabel

b. Uji Chow

$H_0 : \alpha_1 = \alpha_2 = \ldots = \alpha_n$ (*common effect*)

$H_1 : \alpha_1 \neq \alpha_2 \neq \ldots \neq \alpha_n$ (*fixed effect*)

$$CHOW = \frac{(RRSS - URSS)/(N-1)}{URSS/(NT-N-K)}$$

dimana:

RRSS : *Residual sum of Square* dari model *common effect* = 147.0384

URSS : *Residual sum of Squares* dari model *fixed effect* = 5.378432

N : Jumlah data *cross section* = 30

T : Jumlah data *time series* = 7

K   : Jumlah variabel penjelas = 4

$$CHOW = \frac{(147.0384 - 5.378432)/(30-1)}{5.378432/(210-30-4)} = 160{,}76$$

$F_{tabel} = F_{0,05,\ 29,\ 177} = 0.0000….$ (mendekati 0)

Jadi, kesimpulannya adalah tolak H_0, karena F hitung > F tabel

c. Uji *Redundant Fixed Effect Tests*

Redundant Fixed Effects Tests
Pool: FIX
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	443.712336	(29,176)	0.0000

Cross-section fixed effects test equation:
Dependent Variable: LOG(D?)
Method: Panel EGLS (Cross-section weights)
Date: 05/08/10   Time: 07:59
Sample: 2002 2008
Included observations: 7
Cross-sections included: 30
Total pool (balanced) observations: 210
Use pre-specified GLS weights
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.798089	2.776374	-1.007821	0.3147
LOG(P?)	-0.375634	0.482840	-0.777967	0.4375
LOG(JP?)	0.444135	0.025731	17.26088	0.0000
LOG(PDRBI?)	0.862534	0.033226	25.95953	0.0000
LOG(HS?)	0.068212	0.054502	1.251548	0.2122

Weighted Statistics			
R-squared	0.932559	Mean dependent var	11.89272
Adjusted R-squared	0.931244	S.D. dependent var	13.88284
S.E. of regression	1.394422	Sum squared resid	398.6047
F-statistic	708.6788	Durbin-Watson stat	0.053028
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.857512	Mean dependent var	4.773823
Sum squared resid	178.0586	Durbin-Watson stat	0.086206

Pemilihan Model *Fixed Effect* dan *Random Effect*

Uji Hausman

Correlated Random Effects - Hausman Test
Pool: FIX
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.824740	4	0.0122

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LOG(P?)	-0.024228	-0.024215	0.000001	0.9884
LOG(JP?)	0.205217	0.320891	0.001234	0.0010
LOG(PDRBI?)	0.556524	0.844707	0.016036	0.0229
LOG(HS?)	0.030995	0.003914	0.000180	0.0433

Cross-section random effects test equation:
Dependent Variable: LOG(D?)
Method: Panel Least Squares
Date: 05/08/10   Time: 08:01
Sample: 2002 2008
Included observations: 7
Cross-sections included: 30
Total pool (balanced) observations: 210

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.033855	1.200744	-0.861012	0.3904
LOG(P?)	-0.024228	0.028151	-0.860640	0.3906
LOG(JP?)	0.205217	0.078841	2.602913	0.0100
LOG(PDRBI?)	0.556524	0.152941	3.638806	0.0004
LOG(HS?)	0.030995	0.027162	1.141101	0.2554

Effects Specification				

Cross-section fixed (dummy variables)

R-squared	0.995102	Mean dependent var	4.773823
Adjusted R-squared	0.994184	S.D. dependent var	2.445226
S.E. of regression	0.186480	Akaike info criterion	-0.373796
Sum squared resid	6.120382	Schwarz criterion	0.168116
Log likelihood	73.24863	Hannan-Quinn criter.	-0.154721
F-statistic	1083.608	Durbin-Watson stat	1.275840
Prob(F-statistic)	0.000000		

Lampiran 4. Jumlah Pelanggan Industri

Pelanggan Industri	2002		2003		2004		2005		2006		2007		2008	
	jumlah Pelanggan	Konsumsi (kWh)	jumlah Pelanggan	Konsumsi (kWh)	jumlah Pelanggan	Konsumsi (kWh)	jumlah Pelanggan	Konsumsi (kWh)	jumlah Pelanggan	Konsumsi (kWh)	jumlah Pelanggan	Konsumsi (kWh)	jumlah Pelanggan	Konsumsi (kWh)
I-1=900/TR	402	603	452	678	443	642	421	623	431	618	422	645	434	690
I-1=1300/TR	582	353	630	1,307,566	581	1,381	542	1,405	576	1,193	586	1,250	589	1,185
I-1=2200/TR	1,208	4,610	992	3,203,868	1,176	3,570	951	3,217	937	2,860	961	3,333	984	3,658
I-1 sisanya/TR	12,017	124,542	11,955	113,531	11,624	113,112	11,545	112,160	11,323	112,645	11,190	121,715	11,053	143,058
I-2/TR	24,316	2,533,501	24,958	2,700,549	24,810	2,777,031	24,975	2,998,799	24,955	30,181,340	25,278	3,277,388	25,800	3,504,953
I-3/TM	7,114	23,714,265	7,375	23,446,327	7,435	25,862,821	7,607	27,347,823	7,699	28,238,050	7,916	30,499,886	8,165	32,298,984
I-4/TT	53	10,323,167	59	10,095,246	56	11,298,938	58	11,761,016	57	11,927,310	56	11,527,345	56	11,597,829

PT PLN (Persero)