ANALISIS ERROR CORRECTION MECHANISM (ECM)

Stationarity Test

STATIONARY TEST ON LEVEL

1. **Soybean Availability (QS)**

Null Hypothesis: QS has a unit root

Exogenous: None

Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		0.870719	0.8943
Test critical values:	1% level	-2.613010	
	5% level	-1.947665	
	10% level	-1.612573	

*MacKinnon (1996) one-sided p-values.

2. **Planted Area (LAT)**

Null Hypothesis: LAT has a unit root

Exogenous: None

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.495612	0.4964
Test critical values:	1% level	-2.613010	
	5% level	-1.947665	
	10% level	-1.612573	

*MacKinnon (1996) one-sided p-values.

3. Productivity (PRKD)

Null Hypothesis: PRKD has a unit root

Exogenous: None

Bandwidth: 8 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		4.734252	1.0000
Test critical values:	1% level	-2.613010	
	5% level	-1.947665	
	10% level	-1.612573	

*MacKinnon (1996) one-sided p-values.

4. Domestic Soybean Prices (HKD)

Null Hypothesis: HKD has a unit root

Exogenous: None

Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		3.308650	0.9996
Test critical values:	1% level	-2.613010	
	5% level	-1.947665	
	10% level	-1.612573	

*MacKinnon (1996) one-sided p-values.

5. Import Soybean Prices (HKI)

Null Hypothesis: HKI has a unit root

Exogenous: None

Bandwidth: 16 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		0.950628	0.9069
Test critical values:	1% level	-2.613010	
	5% level	-1.947665	
	10% level	-1.612573	

*MacKinnon (1996) one-sided p-values.

6. The Total Soybean Consumption

Null Hypothesis: JKK has a unit root

Exogenous: None

Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		0.846952	0.8903
Test critical values:	1% level	-2.613010	
	5% level	-1.947665	
	10% level	-1.612573	

*MacKinnon (1996) one-sided p-values.

7. Import Tariff (TI)

Null Hypothesis: TI has a unit root

Exogenous: None

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.545634	0.1137
Test critical values:	1% level	-2.613010	

	5% level	-1.947665
	10% level	-1.612573

*MacKinnon (1996) one-sided p-values.

8. The Rupiah Exchange Rate (NTR)

Null Hypothesis: NTR has a unit root

Exogenous: None

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		1.333751	0.9522
Test critical values:	1% level	-2.613010	
	5% level	-1.947665	
	10% level	-1.612573	

*MacKinnon (1996) one-sided p-values.

STATIONARY TEST ON FIRST DIFFERENCE

1. Soybean Availability (QS)

Null Hypothesis: D(QS) has a unit root

Exogenous: None

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-9.930756	0.0000
Test critical values:	1% level	-2.614029	
	5% level	-1.947816	
	10% level	-1.612492	

*MacKinnon (1996) one-sided p-values.

2. Planted Area (LAT)

Null Hypothesis: D(LAT) has a unit root

Exogenous: None

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.319065	0.0000
Test critical values:	1% level	-2.614029	
	5% level	-1.947816	
	10% level	-1.612492	

*MacKinnon (1996) one-sided p-values.

3. Productivity (PRKD)

Null Hypothesis: D(PRKD) has a unit root

Exogenous: None

Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.569105	0.0000
Test critical values:	1% level	-2.614029	
	5% level	-1.947816	
	10% level	-1.612492	

*MacKinnon (1996) one-sided p-values.

4. Domestic Soybean Prices (HKD)

Null Hypothesis: D(HKD) has a unit root

Exogenous: None

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.850401	0.0000
Test critical values:	1% level	-2.614029	
	5% level	-1.947816	
	10% level	-1.612492	

*MacKinnon (1996) one-sided p-values.

5. Import Soybean Prices (HKI)

Null Hypothesis: D(HKI) has a unit root

Exogenous: None

Bandwidth: 11 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.461816	0.0000
Test critical values:	1% level	-2.614029	
	5% level	-1.947816	
	10% level	-1.612492	

*MacKinnon (1996) one-sided p-values.

6. The Total Soybean Consumption

Null Hypothesis: D(JKK) has a unit root

Exogenous: None

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-10.04438	0.0000
Test critical values:	1% level	-2.614029	
	5% level	-1.947816	
	10% level	-1.612492	

*MacKinnon (1996) one-sided p-values.

7. Import Tariff (TI)

Null Hypothesis: D(TI) has a unit root

Exogenous: None

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.762518	0.0000
Test critical values:	1% level	-2.614029	
	5% level	-1.947816	
	10% level	-1.612492	

*MacKinnon (1996) one-sided p-values.

8. The Rupiah Exchange Rate (NTR)

Null Hypothesis: D(NTR) has a unit root

Exogenous: None

Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.140896	0.0000
Test critical values:	1% level	-2.614029	
	5% level	-1.947816	

10% level	-1.612492	

*MacKinnon (1996) one-sided p-values.

LONG-TERM EQUATION

Dependent Variable: QS

Method: Least Squares

Date: 09/25/16 Time: 13:14

Sample: 1 50

Included observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-53669.35	24548.78	-2.186322	0.0346
LAT	0.045116	0.013574	3.323763	0.0019
PRVT	14.25213	3.837255	3.714148	0.0006
HKD	0.004850	0.002343	2.069653	0.0448
HKI	-0.053188	0.027713	-1.919261	0.0619
JKK	1.096529	0.009661	114.6872	0.0000
TI	90.92124	229.3315	0.396462	0.6938
NTR	-9.084195	4.433941	-2.048786	0.0469
DUMMY	42275.26	29172.13	1.449166	0.1549

R-squared	0.979824	Mean dependent var	1615799.
Adjusted R-squared	0.979789	S.D. dependent var	885426.8
S.E. of regression	12844.58	Akaike info criterion	21.92125
Sum squared resid	6.77E+09	Schwarz criterion	22.26541
Log likelihood	-539.0312	Hannan-Quinn criter.	22.05231
F-statistic	29.08654	Durbin-Watson stat	1.758087
Prob(F-statistic)	0.000000		

COINTEGRATED TEST

Null Hypothesis: RES has a unit root

Exogenous: None

Bandwidth: 8 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.196910	0.0000
Test critical values:	1% level	-2.613010	
	5% level	-1.947665	
	10% level	-1.612573	

*MacKinnon (1996) one-sided p-values.

SORT-TERM EQUATION

Dependent Variable: D(QS)

Method: Least Squares

Date: 09/25/16 Time: 13:17

Sample (adjusted): 2 50

Included observations: 49 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	879.9515	1779.337	0.494539	0.6237
D(LAT)	0.049935	0.014133	3.533216	0.0011
D(PRVT)	5.145610	4.633452	1.110535	0.2736
D(HKD)	-0.001615	0.003688	-0.476509	0.6364
D(HKI)	0.043415	0.031126	1.394844	0.1710
D(JKK)	1.099358	0.007239	151.8751	0.0000
D(TI)	820.4364	290.7589	2.821609	0.0075
D(NTR)	-2.319834	3.191525	-0.726873	0.4716
D(DUMMY)	-8088.434	23844.22	-0.339220	0.7363

RES(-1)	-0.846158	0.136685	-6.190570	0.0000

R-squared	0.979179	Mean dependent var	47094.84
Adjusted R-squared	0.978989	S.D. dependent var	321899.0
S.E. of regression	10255.11	Akaike info criterion	21.48494
Sum squared resid	4.09E+09	Schwarz criterion	21.87103
Log likelihood	-516.3810	Hannan-Quinn criter.	21.63142
F-statistic	52.71034	Durbin-Watson stat	1.972760
Prob(F-statistic)	0.000000		

Classical Assumptions

1. **Multicollinearity**

Variance Inflation Factors

Date: 09/25/16 Time: 15:58

Sample: 1 50

Included observations: 49

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	3166039.	1.480905	NA
D(LAT)	0.000200	1.449858	1.449842
D(PRVT)	21.46888	1.519800	1.296858
D(HKD)	1.15E-05	2.869883	2.679891
D(HKI)	0.000969	2.851354	2.779506
D(JKK)	5.24E-05	2.080240	2.037825
D(TI)	84546.57	1.119809	1.119809
D(NTR)	10.18583	6.208862	6.000914
D(DUMMY)	5.69E+08	5.427267	5.316507
RES(-1)	0.018683	1.195023	1.194780

2. Homoscedasticity

Heteroskedasticity Test: White

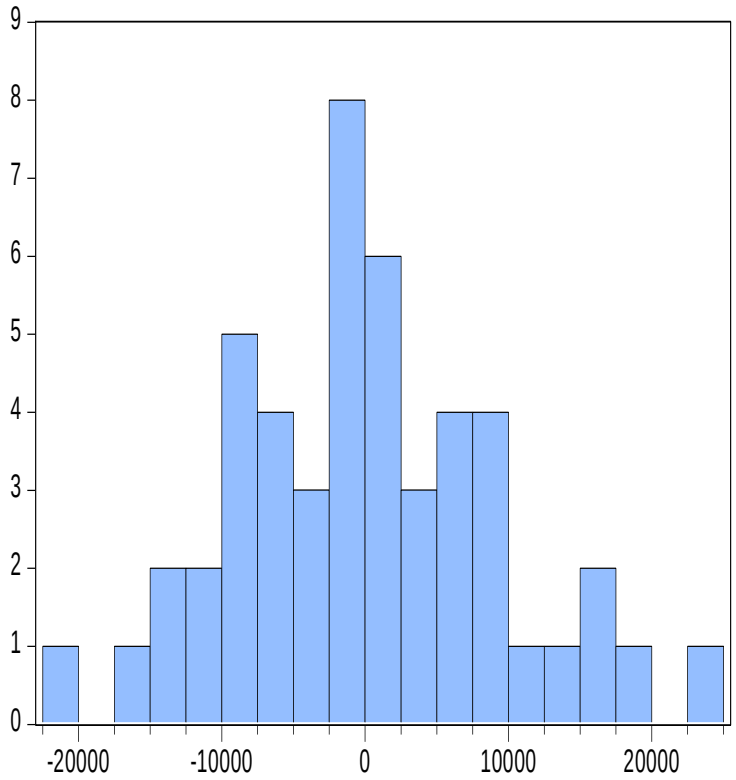
F-statistic	0.753775	Prob. F(9,39)	0.6583
Obs*R-squared	7.260509	Prob. Chi-Square(9)	0.6100
Scaled explained SS	5.018026	Prob. Chi-Square(9)	0.8327

3. Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.036539	Prob. F(2,37)	0.9642
Obs*R-squared	0.096588	Prob. Chi-Square(2)	0.9529

4. Normality



Series: Residuals	
Sample 2 50	
Observations 49	
Mean	1.78e-12
Median	-429.2403
Maximum	24936.08
Minimum	-20887.19
Std. Dev.	9225.805
Skewness	0.335384
Kurtosis	3.182021
Jarque-Bera	0.986251
Probability	0.610715