

APPENDIX

APPENDIX 1

DATA

Period	JII	ER	O	G	FTSE
2012;10	619.27	Rp 9,593	1,488,647	16,759,353	1,673.07
2012;11	588.78	Rp 9,614	1,453,334	16,553,352	1,610.83
2012;12	594.79	Rp 9,642	1,459,064	16,264,068	1,688.95
2013;1	604.61	Rp 9,658	1,505,305	16,141,039	1,627.55
2013;2	645.22	Rp 9,676	1,546,482	15,757,259	1,637.63
2013;3	660.34	Rp 9,709	1,445,471	15,463,845	1,671.63
2013;4	682.69	Rp 9,710	1,362,584	14,438,508	1,717.65
2013;5	676.58	Rp 9,751	1,366,715	13,789,433	1,769.22
2013;6	660.16	Rp 9,866	1,371,512	13,247,990	1,773.54
2013;7	623.75	Rp 10,081	1,438,275	12,963,065	1,772.62
2013;8	592.00	Rp 10,534	1,482,917	14,178,540	1,727.58
2013;9	585.59	Rp 11,337	1,487,182	15,264,893	1,768.62
2013;10	615.71	Rp 11,346	1,453,600	14,930,687	1,806.85
2013;11	579.87	Rp 11,603	1,436,410	14,807,842	1,812.72
2013;12	585.11	Rp 12,085	1,475,988	14,780,146	1,866.96
2014;1	602.87	Rp 12,164	1,440,807	15,133,144	1,804.03
2014;2	626.86	Rp 11,912	1,451,201	15,499,713	1,835.66
2014;3	640.41	Rp 11,412	1,432,278	15,253,877	1,849.21
2014;4	647.67	Rp 11,439	1,436,010	14,848,664	1,871.52
2014;5	656.83	Rp 11,543	1,459,730	14,849,144	1,873.38
2014;6	655.00	Rp 11,891	1,489,847	15,213,637	1,882.71
2014;7	690.40	Rp 11,646	1,422,817	15,287,042	1,871.36
2014;8	691.13	Rp 11,700	1,354,055	15,161,646	1,866.11
2014;9	687.62	Rp 11,896	1,293,821	14,736,588	1,846.31
2014;10	670.44	Rp 12,152	1,165,092	14,842,872	1,855.15
2014;11	683.01	Rp 12,165	1,058,617	14,311,907	1,820.89
2014;12	691.04	Rp 12,433	830,743	14,942,203	1,761.25
2015;1	706.68	Rp 12,584	636,450	15,747,958	1,781.26
2015;2	722.10	Rp 12,783	774,241	15,657,972	1,821.21
2015;3	728.20	Rp 13,071	744,790	15,399,076	1,830.78
2015;4	664.80	Rp 12,935	793,164	15,504,233	1,818.27
2015;5	698.07	Rp 13,144	853,930	15,752,149	1,747.52

2015;6	656.99	Rp 13,310	819,282	15,721,772	1,706.64
2015;7	641.97	Rp 13,382	753,719	15,112,957	1,723.14
2015;8	598.28	Rp 13,807	619,926	15,397,834	1,612.74
2015;9	556.09	Rp 14,430	634,584	16,205,314	1,621.04
2015;10	586.10	Rp 13,791	645,378	15,965,320	1,665.71
2015;11	579.80	Rp 13,684	589,942	14,847,563	1,672.16
2015;12	603.35	Rp 13,831	506,521	14,813,554	1,692.51
2016;1	612.75	Rp 13,897	409,108	15,243,908	1,667.80
2016;2	641.86	Rp 13,506	428,831	16,207,272	1,654.75
2016;3	652.69	Rp 13,197	509,186	16,434,524	1,717.58

APPENDIX 2

Unit Root Test-Level

Null Hypothesis: D(ER) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.915848	0.0003
Test critical values: 1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

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

Null Hypothesis: D(FTSE) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.049091	0.0000
Test critical values: 1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

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

Null Hypothesis: D(G) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.572937	0.0000
Test critical values: 1% level	-3.610453	

5% level -2.938987
 10% level -2.607932

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

Null Hypothesis: D(JII) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.920507	0.0000
Test critical values: 1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

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

Null Hypothesis: D(O) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.226654	0.0019
Test critical values: 1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

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

APPENDIX 3

Lag Length Criteria

VAR Lag Order Selection Criteria
 Endogenous variables: JII O G FTSE ER
 Exogenous variables: C
 Date: 03/16/17 Time: 17:54
 Sample: 2012M10 2016M03
 Included observations: 39

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1841.988	NA	9.39e+34	94.71731	94.93059	94.79384
1	-1672.834	286.2593	5.86e+31	87.32484	88.60450*	87.78397
2	-1638.250	49.65955	3.83e+31	86.83334	89.17939	87.67508
3	-1605.788	38.28877*	3.12e+31*	86.45066*	89.86309	87.67501*

* indicates lag order selected by the criterion
 LR: sequential modified LR test statistic (each test at 5% level)
 FPE: Final prediction error

AIC: Akaike information criterion
 SC: Schwarz information criterion
 HQ: Hannan-Quinn information criterion

APPENDIX 4

VAR Stability Test

Roots of Characteristic Polynomial
 Endogenous variables: JII O G FTSE ER
 Exogenous variables: C
 Lag specification: 1 2
 Date: 03/16/17 Time: 17:59

Root	Modulus
0.938848 - 0.060210i	0.940777
0.938848 + 0.060210i	0.940777
0.586029 - 0.397577i	0.708165
0.586029 + 0.397577i	0.708165
0.661301 - 0.172586i	0.683451
0.661301 + 0.172586i	0.683451
0.147559 - 0.499832i	0.521158
0.147559 + 0.499832i	0.521158
-0.112336 - 0.153049i	0.189851
-0.112336 + 0.153049i	0.189851

No root lies outside the unit circle.
 VAR satisfies the stability condition.

APPENDIX 5

Co-Integration Test

Date: 03/16/17 Time: 18:00
 Sample (adjusted): 2013M01 2016M03
 Included observations: 39 after adjustments
 Trend assumption: Linear deterministic trend
 Series: JII O G FTSE ER
 Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.582392	107.4465	69.81889	0.0000
At most 1 *	0.537323	73.39118	47.85613	0.0000
At most 2 *	0.511506	43.33289	29.79707	0.0008

At most 3	0.246724	15.39219	15.49471	0.0518
At most 4 *	0.105373	4.342581	3.841466	0.0372

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.582392	34.05530	33.87687	0.0476
At most 1 *	0.537323	30.05829	27.58434	0.0236
At most 2 *	0.511506	27.94070	21.13162	0.0047
At most 3	0.246724	11.04961	14.26460	0.1517
At most 4 *	0.105373	4.342581	3.841466	0.0372

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

APPENDIX 6

VECM Estimation Process

Vector Error Correction Estimates

Date: 03/16/17 Time: 18:01

Sample (adjusted): 2013M02 2016M03

Included observations: 38 after adjustments

Standard errors in () & t-statistics in []

Cointegrating Eq:	CointEq1
JII(-1)	1.000000
O(-1)	0.000262 (1.2E-05) [21.7305]
G(-1)	-6.78E-05 (3.7E-06) [-18.1313]
FTSE(-1)	-0.968418 (0.03477) [-27.8538]
ER(-1)	0.066434 (0.00308) [21.5448]
C	1000.517

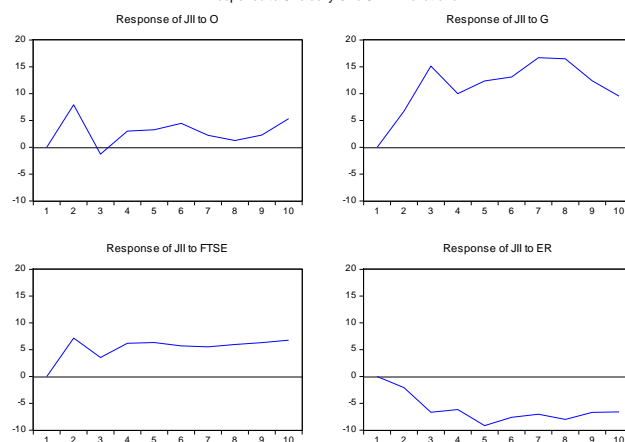
Error Correction:	D(JII)	D(O)	D(G)	D(FTSE)	D(ER)
CointEq1	-0.512443 (0.13629) [-3.75989]	-142.7840 (549.965) [-0.25962]	4377.579 (3484.21) [1.25640]	0.567240 (0.26109) [2.17255]	3.257696 (2.07257) [1.57181]
D(JII(-1))	0.425862 (0.17574) [2.42330]	-1360.718 (709.131) [-1.91885]	-5438.445 (4492.58) [-1.21054]	0.225016 (0.33666) [0.66838]	-3.536736 (2.67240) [-1.32343]
D(JII(-2))	0.221371 (0.17132) [1.29215]	232.1751 (691.307) [0.33585]	-6838.023 (4379.66) [-1.56131]	0.827726 (0.32820) [2.52205]	-2.475437 (2.60523) [-0.95018]
D(JII(-3))	-0.549396 (0.17877) [-3.07313]	207.8514 (721.389) [0.28813]	3339.737 (4570.24) [0.73076]	-0.315444 (0.34248) [-0.92106]	2.709048 (2.71860) [0.99649]
D(O(-1))	7.26E-05 (5.5E-05) [1.31500]	0.118017 (0.22267) [0.53000]	-1.384835 (1.41070) [-0.98166]	3.45E-05 (0.00011) [0.32677]	-4.15E-05 (0.00084) [-0.04941]
D(O(-2))	-9.22E-05 (5.4E-05) [-1.71592]	-0.017684 (0.21679) [-0.08157]	-1.780018 (1.37341) [-1.29606]	-5.67E-05 (0.00010) [-0.55053]	-0.000788 (0.00082) [-0.96460]
D(O(-3))	0.000133 (4.8E-05) [2.74224]	-0.111089 (0.19532) [-0.56874]	0.060026 (1.23744) [0.04851]	-4.49E-05 (9.3E-05) [-0.48372]	0.000734 (0.00074) [0.99676]
D(G(-1))	-1.75E-06 (1.1E-05) [-0.16242]	0.061991 (0.04344) [1.42690]	0.455575 (0.27523) [1.65523]	5.96E-05 (2.1E-05) [2.88755]	0.000119 (0.00016) [0.72384]
D(G(-2))	-2.42E-05 (1.3E-05) [-1.93008]	0.053484 (0.05068) [1.05538]	0.282520 (0.32106) [0.87997]	1.33E-05 (2.4E-05) [0.55298]	2.97E-05 (0.00019) [0.15549]
D(G(-3))	-2.74E-05 (9.0E-06) [-3.02587]	-0.023990 (0.03651) [-0.65710]	0.271418 (0.23130) [1.17346]	1.16E-05 (1.7E-05) [0.67014]	0.000265 (0.00014) [1.92819]
D(FTSE(-1))	0.051689 (0.11805) [0.43787]	285.4714 (476.344) [0.59930]	-4316.982 (3017.80) [-1.43051]	0.387012 (0.22614) [1.71136]	-0.430143 (1.79513) [-0.23962]
D(FTSE(-2))	-0.102988 (0.11712) [-0.87936]	1025.991 (472.592) [2.17099]	6706.966 (2994.03) [2.24011]	0.188143 (0.22436) [0.83857]	2.958194 (1.78099) [1.66098]
D(FTSE(-3))	-0.093591 (0.11199) [-0.83572]	448.1875 (451.891) [0.99180]	6568.744 (2862.88) [2.29445]	0.000706 (0.21453) [0.00329]	-1.187615 (1.70298) [-0.69737]
D(ER(-1))	0.023403 (0.01570)	-65.85116 (63.3598)	-208.5527 (401.406)	-0.011874 (0.03008)	0.070643 (0.23878)

	[1.49048]	[-1.03932]	[-0.51956]	[-0.39475]	[0.29585]
D(ER(-2))	-0.008579 (0.01573) [-0.54554]	-21.16470 (63.4586) [-0.33352]	-120.9877 (402.032) [-0.30094]	-0.024503 (0.03013) [-0.81331]	-0.147797 (0.23915) [-0.61802]
D(ER(-3))	0.015768 (0.01603) [0.98379]	-28.14250 (64.6756) [-0.43513]	-458.6889 (409.742) [-1.11946]	-0.004101 (0.03070) [-0.13355]	-0.109304 (0.24373) [-0.44846]
C	-1.929404 (4.62987) [-0.41673]	-13327.87 (18682.4) [-0.71339]	28278.75 (118360.) [0.23892]	5.291293 (8.86944) [0.59658]	128.6298 (70.4059) [1.82697]
R-squared	0.715813	0.475305	0.585025	0.533761	0.486916
Adj. R-squared	0.499289	0.075537	0.268853	0.178531	0.095995
Sum sq. resids	6823.783	1.11E+11	4.46E+12	25042.59	1577993.
S.E. equation	18.02615	72739.03	460826.2	34.53265	274.1214
F-statistic	3.305931	1.188953	1.850338	1.502577	1.245562
Log likelihood	-152.5407	-468.0475	-538.2010	-177.2439	-255.9672
Akaike AIC	8.923197	25.52882	29.22110	10.22336	14.36669
Schwarz SC	9.655801	26.26142	29.95371	10.95597	15.09930
Mean dependent	1.265263	-26213.64	7723.290	2.369211	93.13158
S.D. dependent	25.47471	75652.41	538933.0	38.10081	288.3086
Determinant resid covariance (dof adj.)		2.11E+30			
Determinant resid covariance		1.09E+29			
Log likelihood		-1539.885			
Akaike information criterion		85.78340			
Schwarz criterion		89.66189			

APPENDIX 7

IRF

Response to Cholesky One S.D. Innovations



APPENDIX 8

FEVD

Period	S.E.	JII	O	G	FTSE	ER
1	18.02615	100.0000	0.000000	0.000000	0.000000	0.000000
2	34.24700	86.01176	5.347920	3.877568	4.390207	0.372541
3	54.53722	84.82632	2.162879	9.215933	2.156629	1.638241
4	66.85003	85.75151	1.642582	8.369850	2.298402	1.937656
5	79.59006	85.40385	1.327497	8.320937	2.257520	2.690192
6	90.12136	85.14331	1.279364	8.604173	2.161259	2.811895
7	100.3589	84.40622	1.080880	9.705814	2.047727	2.759357
8	110.7176	84.14378	0.901080	10.19203	1.973389	2.789719
9	118.8297	84.51435	0.819082	9.933708	1.994866	2.737991
10	126.1074	84.93785	0.906298	9.391979	2.059314	2.704557

Cholesky
Ordering:
JII O
G FTSE
ER