APPENDICES

Appendix 1 Daily Closing Price of Poundsterling (GBP) against US Dollar

No	Date	Poundsterling (GBP)/US Dollar	No	Date	Poundsterling (GBP)/US Dollar
1	4/14/2016	1.4149	34	5/31/2016	1.4483
2	4/15/2016	1.4204	35	6/1/2016	1.4416
3	4/18/2016	1.4274	36	6/2/2016	1.4423
4	4/19/2016	1.439	37	6/3/2016	1.4518
5	4/20/2016	1.4337	38	6/6/2016	1.4442
6	4/21/2016	1.4318	39	6/7/2016	1.4545
7	4/22/2016	1.4403	40	6/8/2016	1.4504
8	4/25/2016	1.4485	41	6/9/2016	1.4458
9	4/26/2016	1.4579	42	6/10/2016	1.4257
10	4/27/2016	1.4541	43	6/13/2016	1.427
11	4/28/2016	1.4607	44	6/14/2016	1.4114
12	4/29/2016	1.4611	45	6/15/2016	1.4204
13	5/2/2016	1.4668	46	6/16/2016	1.4203
14	5/3/2016	1.4545	47	6/17/2016	1.4358
15	5/4/2016	1.4499	48	6/20/2016	1.4698
16	5/5/2016	1.4488	49	6/21/2016	1.4652
17	5/6/2016	1.443	50	6/22/2016	1.4707
18	5/9/2016	1.4409	51	6/23/2016	1.4877
19	5/10/2016	1.4447	52	6/24/2016	1.3679
20	5/11/2016	1.4442	53	6/27/2016	1.3255
21	5/12/2016	1.4446	54	6/28/2016	1.3344
22	5/13/2016	1.4363	55	6/29/2016	1.3429
23	5/16/2016	1.4409	56	6/30/2016	1.3311
24	5/17/2016	1.4456	57	7/1/2016	1.3267
25	5/18/2016	1.4603	58	7/4/2016	1.3287
26	5/19/2016	1.4605	59	7/5/2016	1.3022
27	5/20/2016	1.4509	60	7/6/2016	1.2931
28	5/23/2016	1.4483	61	7/7/2016	1.2908
29	5/24/2016	1.4621	62	7/8/2016	1.2954
30	5/25/2016	1.4699	63	7/11/2016	1.2298
31	5/26/2016	1.467	64	7/12/2016	1.3247
32	5/27/2016	1.4623	65	7/13/2016	1.3147

33	5/30/2016	1.464	66	7/14/2016	1.3343

Appendix 1 (Continued)

No	Date	Poundsterling (GBP)/US Dollar	No	Date	Poundsterling (GBP)/US Dollar
67	7/15/2016	1.3192	85	8/10/2016	1.301
68	7/18/2016	1.3225	86	8/11/2016	1.2956
69	7/19/2016	1.3111	87	8/12/2016	1.292
70	7/20/2016	1.3208	88	8/15/2016	1.288
71	7/21/2016	1.3233	89	8/16/2016	1.3046
72	7/22/2016	1.3109	90	8/17/2016	1.3042
73	7/25/2016	1.3109	91	8/18/2016	1.3168
74	7/26/2016	1.3141	92	8/19/2016	1.3075
75	7/27/2016	1.3215	93	8/22/2016	1.3137
76	7/28/2016	1.3163	94	8/23/2016	1.3198
77	7/29/2016	1.3229	95	8/24/2016	1.3232
78	8/1/2016	1.3185	96	8/25/2016	1.3912
79	8/2/2016	1.3341	97	8/26/2016	1.3137
80	8/3/2016	1.3229	98	8/29/2016	1.3106
81	8/4/2016	1.3114	99	8/30/2016	1.308
82	8/5/2016	1.3076	100	8/31/2016	1.3138
83	8/8/2016	1.304	101	9/1/2016	1.3268
84	8/9/2016	1.3003			

Source: Bloomberg, June 2017

Appendix 2 Daily Closing Price of US Dollar against Rupiah

No	Date	US Dollar/Rupiah	No	Date	US Dollar/Rupiah
1	4/14/2016	13,181.35	34	5/31/2016	13,624.50
2	4/15/2016	13,115.24	35	6/1/2016	13,574.13
3	4/18/2016	13,180.31	36	6/2/2016	13,705.65
4	4/19/2016	13,176.38	37	6/3/2016	13,442.90
5	4/20/2016	13,198.00	38	6/6/2016	13,380.32
6	4/21/2016	13,161.61	39	6/7/2016	13,299.48
7	4/22/2016	13,202.21	40	6/8/2016	13,277.58
8	4/25/2016	13,211.04	41	6/9/2016	13,270.83
9	4/26/2016	13,185.42	42	6/10/2016	13,339.45
10	4/27/2016	13,196.58	43	6/13/2016	13,309.22
11	4/28/2016	13,165.62	44	6/14/2016	13,355.42
12	4/29/2016	13,183.44	45	6/15/2016	13,325.65
13	5/2/2016	13,123.01	46	6/16/2016	13,384.55
14	5/3/2016	13,265.31	47	6/17/2016	13,338.85
15	5/4/2016	13,259.96	48	6/20/2016	13,274.88
16	5/5/2016	13,244.90	49	6/21/2016	13,344.00
17	5/6/2016	13,321.50	50	6/22/2016	13,235.70
18	5/9/2016	13,316.52	51	6/23/2016	13,265.16
19	5/10/2016	13,267.59	52	6/24/2016	13,538.56
20	5/11/2016	13,315.84	53	6/27/2016	13,339.04
21	5/12/2016	13,299.41	54	6/28/2016	13,195.02
22	5/13/2016	13,319.60	55	6/29/2016	13,122.42
23	5/16/2016	13,300.38	56	6/30/2016	13,224.61
24	5/17/2016	13,343.60	57	7/1/2016	13,057.61
25	5/18/2016	13,419.27	58	7/4/2016	13,097.95
26	5/19/2016	13,539.60	59	7/5/2016	13,230.16
27	5/20/2016	13,598.00	60	7/6/2016	13,098.53
28	5/23/2016	13,589.99	61	7/7/2016	13,153.96
29	5/24/2016	13,694.44	62	7/8/2016	13,097.32
30	5/25/2016	13,645.86	63	7/11/2016	13,122.21
31	5/26/2016	13,628.00	64	7/12/2016	13,155.69
32	5/27/2016	13,643.77	65	7/13/2016	13,081.67
33	5/30/2016	13,645.70	66	7/14/2016	13,079.10

Appendix 2 (Continued)

No	Date	US Dollar/Rupiah	No	Date	US Dollar/Rupiah
67	7/15/2016	13,088.73	85	8/10/2016	13,099.78
68	7/18/2016	13,056.90	86	8/11/2016	13,107.98
69	7/19/2016	13,136.99	87	8/12/2016	13,136.50
70	7/20/2016	13,138.40	88	8/15/2016	13,067.00
71	7/21/2016	13,097.65	89	8/16/2016	13,118.76
72	7/22/2016	13,110.50	90	8/17/2016	13,116.88
73	7/25/2016	13,110.10	91	8/18/2016	13,102.87
74	7/26/2016	13,140.47	92	8/19/2016	13,172.40
75	7/27/2016	13,185.13	93	8/22/2016	13,217.06
76	7/28/2016	13,079.66	94	8/23/2016	13,247.47
77	7/29/2016	13,119.62	95	8/24/2016	13,265.58
78	8/1/2016	13,111.72	96	8/25/2016	13,260.00
79	8/2/2016	13,207.87	97	8/26/2016	13,261.87
80	8/3/2016	13,615.90	98	8/29/2016	13,255.96
81	8/4/2016	13,171.62	99	8/30/2016	13,291.65
82	8/5/2016	13,119.30	100	8/31/2016	13,285.68
83	8/8/2016	13,197.55	101	9/1/2016	13,275.90
84	8/9/2016	13,125.04			

Source: Bloomberg, June 2017

Appendix 3 Statistical Analysis Result of Poundsterling (GBP) against US Dollar

GBP_USD	
Mean	1.381912871
Median	1.4114
Maximum	1.4877
Minimum	1.2298
Std. Dev.	0.068962333
Skewness	-0.086939872
Kurtosis	1.331712223
Jarque-Bera	11.83980189
Probability	0.002685466
Sum	139.5732
Sum Sq. Dev.	0.475580333
Observations	101

Appendix 4 Statistical Analysis Result of US Dollar against Rupiah

USD_IDR	
Mean	13261.16853
Median	13224.60742
Maximum	13705.64648
Minimum	13056.9
Std. Dev.	164.6797825
Skewness	1.163068003
Kurtosis	3.570920351
Jarque-Bera	24.14261397
Probability	5.72E-06
Sum	1339378.022
Sum Sq. Dev.	2711943.078
Observations	101

Source: Data Processed by Researcher, July 2017

Appendix 5 Normality Test of Poundsterling (GBP) against US Dollar

One-Sample Kolmogorov-Smirnov Test

		GBP_USD
N		101
Normal Parameters[a]	Mean	1.381913
	Std. Deviation	.0689623
Most Extreme Differences	Absolute	.220
	Positive	.220
	Negative	-.196
Kolmogorov-Smirnov Z		2.210
Asymp. Sig. (2-tailed)		.000

a. Test distribution is Normal.

Appendix 6 Normality Test of US Dollar against Rupiah

One-Sample Kolmogorov-Smirnov Test

		USD_Rupiah
N		101
Normal Parameters[a]	Mean	13253.21
	Std. Deviation	161.442
Most Extreme Differences	Absolute	.142
	Positive	.142
	Negative	-.112
Kolmogorov-Smirnov Z		1.425
Asymp. Sig. (2-tailed)		.035

a. Test distribution is Normal.

Appendix 7 Wilcoxon test of Poundsterling (GBP) against US Dollar

Ranks

		N	Mean Rank	Sum of Ranks
Post Test - Pre Test	Negative Ranks	43[a]	27.48	1181.50
	Positive Ranks	7[b]	13.36	93.50
	Ties	0[c]		
	Total	50		

a. Post Test < Pre Test

b. Post Test > Pre Test

c. Post Test = Pre Test

Test Statistics[b]

	Post Test - Pre Test
Z	-5.251[a]
Asymp. Sig. (2-tailed)	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Appendix 8 Wilcoxon test of US Dollar against Rupiah

Ranks

		N	Mean Rank	Sum of Ranks
Post Test - Pre Test	Negative Ranks	42[a]	28.10	1180.00
	Positive Ranks	8[b]	11.88	95.00
	Ties	0[c]		
	Total	50		

a. Post Test < Pre Test

b. Post Test > Pre Test

c. Post Test = Pre Test

Test Statistics[b]

	Post Test - Pre Test
Z	-5.237[a]
Asymp. Sig. (2-tailed)	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Appendix 9 Tentative ARIMA Model of Poundsterling (GBP) against US Dollar

a. ARIMA (0,1,1)

Dependent Variable: D(GBP_USD)
Method: Least Squares
Date: 08/01/17 Time: 11:05
Sample (adjusted): 4/15/2016 9/01/2016
Included observations: 100 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 4/14/2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000936	0.001706	-0.548912	0.5843
MA(1)	-0.217598	0.098849	-2.201314	0.0301

R-squared	0.043374	Mean dependent var	-0.000881
Adjusted R-squared	0.033612	S.D. dependent var	0.022106
S.E. of regression	0.021732	Akaike info criterion	-4.800294
Sum squared resid	0.046282	Schwarz criterion	-4.748191
Log likelihood	242.0147	Hannan-Quinn criter.	-4.779207
F-statistic	4.443340	Durbin-Watson stat	1.985617
Prob(F-statistic)	0.037589		

Inverted MA Roots	.22

b. ARIMA (1,1,0)

Dependent Variable: D(GBP_USD)
Method: Least Squares
Date: 08/01/17 Time: 11:10
Sample (adjusted): 4/18/2016 9/01/2016
Included observations: 99 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000958	0.001822	-0.525902	0.6002
AR(1)	-0.205111	0.099541	-2.060568	0.0420

R-squared	0.041937	Mean dependent var	-0.000945
Adjusted R-squared	0.032060	S.D. dependent var	0.022209
S.E. of regression	0.021851	Akaike info criterion	-4.789189
Sum squared resid	0.046312	Schwarz criterion	-4.736763
Log likelihood	239.0649	Hannan-Quinn criter.	-4.767977
F-statistic	4.245939	Durbin-Watson stat	2.003105
Prob(F-statistic)	0.042021		

Inverted AR Roots	-.21

c. ARIMA (1,1,1)

Dependent Variable: D(GBP_USD)
Method: Least Squares
Date: 08/01/17 Time: 11:12
Sample (adjusted): 4/18/2016 9/01/2016
Included observations: 99 after adjustments
Convergence achieved after 52 iterations
MA Backcast: OFF (Roots of MA process too large)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000819	0.002030	-0.403240	0.6877
AR(1)	0.914519	0.051930	17.61061	0.0000
MA(1)	-1.122064	0.092653	-12.11043	0.0000

R-squared	0.196175	Mean dependent var	-0.000945
Adjusted R-squared	0.179429	S.D. dependent var	0.022209
S.E. of regression	0.020118	Akaike info criterion	-4.944520
Sum squared resid	0.038856	Schwarz criterion	-4.865880
Log likelihood	247.7537	Hannan-Quinn criter.	-4.912702
F-statistic	11.71452	Durbin-Watson stat	2.434661
Prob(F-statistic)	0.000028		

Inverted AR Roots	.91
Inverted MA Roots	1.12
	Estimated MA process is noninvertible

d. ARIMA (12,1,1)

Dependent Variable: D(GBP_USD)
Method: Least Squares
Date: 08/01/17 Time: 11:14
Sample (adjusted): 5/03/2016 9/01/2016
Included observations: 88 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 5/02/2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001527	0.001384	-1.103690	0.2728
AR(12)	-0.339306	0.116167	-2.920858	0.0045
MA(1)	-0.213107	0.107653	-1.979585	0.0510

R-squared	0.135597	Mean dependent var	-0.001591
Adjusted R-squared	0.115259	S.D. dependent var	0.023408
S.E. of regression	0.022018	Akaike info criterion	-4.760419
Sum squared resid	0.041207	Schwarz criterion	-4.675964

Log likelihood	212.4584	Hannan-Quinn criter.		-4.726394
F-statistic	6.666907	Durbin-Watson stat		1.984151
Prob(F-statistic)	0.002044			
Inverted AR Roots	.88+.24i	.88-.24i	.65-.65i	.65-.65i
	.24+.88i	.24-.88i	-.24+.88i	-.24-.88i
	-.65+.65i	-.65-.65i	-.88+.24i	-.88-.24i
Inverted MA Roots	.21			

e. ARIMA (12,1,12)

Dependent Variable: D(GBP_USD)
Method: Least Squares
Date: 08/01/17 Time: 11:14
Sample (adjusted): 5/03/2016 9/01/2016
Included observations: 88 after adjustments
Convergence achieved after 8 iterations
MA Backcast: 4/15/2016 5/02/2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002410	0.001255	-1.920055	0.0582
AR(12)	0.189311	0.128135	1.477435	0.1433
MA(12)	-0.842085	0.032922	-25.57820	0.0000

R-squared	0.247728	Mean dependent var		-0.001591
Adjusted R-squared	0.230027	S.D. dependent var		0.023408
S.E. of regression	0.020540	Akaike info criterion		-4.899359
Sum squared resid	0.035862	Schwarz criterion		-4.814904
Log likelihood	218.5718	Hannan-Quinn criter.		-4.865334
F-statistic	13.99551	Durbin-Watson stat		2.418803
Prob(F-statistic)	0.000006			
Inverted AR Roots	.87	.75+.44i	.75-.44i	.44+.75i
	.44-.75i	.00-.87i	-.00+.87i	-.44+.75i
	-.44-.75i	-.75+.44i	-.75-.44i	-.87
Inverted MA Roots	.99	.85+.49i	.85-.49i	.49-.85i
	.49+.85i	.00-.99i	-.00+.99i	-.49-.85i
	-.49+.85i	-.85+.49i	-.85-.49i	-.99

f. ARIMA (12,1,0)

Dependent Variable: D(GBP_USD)
Method: Least Squares
Date: 08/01/17 Time: 11:13
Sample (adjusted): 5/03/2016 9/01/2016
Included observations: 88 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001503	0.001762	-0.852905	0.3961
AR(12)	-0.353455	0.116074	-3.045075	0.0031

R-squared	0.097326	Mean dependent var	-0.001591
Adjusted R-squared	0.086830	S.D. dependent var	0.023408
S.E. of regression	0.022369	Akaike info criterion	-4.739823
Sum squared resid	0.043032	Schwarz criterion	-4.683520
Log likelihood	210.5522	Hannan-Quinn criter.	-4.717140
F-statistic	9.272479	Durbin-Watson stat	2.397699
Prob(F-statistic)	0.003087		

Inverted AR Roots	.89-.24i	.89+.24i	.65-.65i	.65+.65i
	.24+.89i	.24-.89i	-.24+.89i	-.24-.89i
	-.65+.65i	-.65+.65i	-.89-.24i	-.89+.24i

Appendix 10 Tentative ARIMA Model of US Dollar against Rupiah

a. ARIMA (1,1,0)

Dependent Variable: D(USD_IDR)
Method: Least Squares
Date: 08/18/17 Time: 20:56
Sample (adjusted): 4/18/2016 9/01/2016
Included observations: 99 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.495849	7.124427	0.209961	0.8341
AR(1)	-0.287225	0.096991	-2.961361	0.0039

R-squared	0.082913	Mean dependent var	1.622808
Adjusted R-squared	0.073458	S.D. dependent var	94.79486
S.E. of regression	91.24672	Akaike info criterion	11.88501
Sum squared resid	807618.5	Schwarz criterion	11.93743
Log likelihood	-586.3078	Hannan-Quinn criter.	11.90622
F-statistic	8.769660	Durbin-Watson stat	2.130420
Prob(F-statistic)	0.003851		

Inverted AR Roots	-.29

b. ARIMA (1,1,1)

Dependent Variable: D(USD_IDR)
Method: Least Squares
Date: 08/18/17 Time: 21:01
Sample (adjusted): 4/18/2016 9/01/2016
Included observations: 99 after adjustments
Convergence achieved after 10 iterations
MA Backcast: 4/15/2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.280503	5.398681	0.237188	0.8130
AR(1)	0.109573	0.263773	0.415405	0.6788
MA(1)	-0.474080	0.233342	-2.031694	0.0449

R-squared	0.116803	Mean dependent var	1.622808
Adjusted R-squared	0.098404	S.D. dependent var	94.79486
S.E. of regression	90.01003	Akaike info criterion	11.86755
Sum squared resid	777773.3	Schwarz criterion	11.94619
Log likelihood	-584.4439	Hannan-Quinn criter.	11.89937
F-statistic	6.348040	Durbin-Watson stat	1.975506
Prob(F-statistic)	0.002575		

Inverted AR Roots	.11
Inverted MA Roots	.47

c. ARIMA (0,1,1)

Dependent Variable: D(USD_IDR)
Method: Least Squares
Date: 08/18/17 Time: 21:21
Sample (adjusted): 4/15/2016 9/01/2016
Included observations: 100 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 4/14/2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.183786	5.525901	0.214225	0.8308
MA(1)	-0.385606	0.093171	-4.138697	0.0001

R-squared	0.116986	Mean dependent var	0.945510
Adjusted R-squared	0.107976	S.D. dependent var	94.55776
S.E. of regression	89.30700	Akaike info criterion	11.84183
Sum squared resid	781622.6	Schwarz criterion	11.89394
Log likelihood	-590.0917	Hannan-Quinn criter.	11.86292
F-statistic	12.98353	Durbin-Watson stat	1.950472

Prob(F-statistic)	0.000496
Inverted MA Roots	.39

d. ARIMA (2,1,1)

Dependent Variable: D(USD_IDR)
Method: Least Squares
Date: 08/18/17 Time: 21:40
Sample (adjusted): 4/19/2016 9/01/2016
Included observations: 98 after adjustments
Convergence achieved after 7 iterations
MA Backcast: 4/18/2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.030753	5.434490	0.189669	0.8500
AR(2)	-0.111513	0.106199	-1.050037	0.2964
MA(1)	-0.338738	0.100926	-3.356289	0.0011

R-squared	0.124052	Mean dependent var	0.975459
Adjusted R-squared	0.105611	S.D. dependent var	95.06204
S.E. of regression	89.90220	Akaike info criterion	11.86546
Sum squared resid	767828.6	Schwarz criterion	11.94459
Log likelihood	-578.4073	Hannan-Quinn criter.	11.89746
F-statistic	6.726966	Durbin-Watson stat	2.014688
Prob(F-statistic)	0.001852		

Inverted MA Roots	.34

e. ARIMA (2,1,0)

Dependent Variable: D(USD_IDR)
Method: Least Squares
Date: 08/18/17 Time: 21:40
Sample (adjusted): 4/19/2016 9/01/2016
Included observations: 98 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.993962	8.377871	0.118641	0.9058
AR(2)	-0.140600	0.100555	-1.398231	0.1653

R-squared	0.019959	Mean dependent var	0.975459
Adjusted R-squared	0.009750	S.D. dependent var	95.06204
S.E. of regression	94.59748	Akaike info criterion	11.95734
Sum squared resid	859073.6	Schwarz criterion	12.01009
Log likelihood	-583.9095	Hannan-Quinn criter.	11.97867
F-statistic	1.955050	Durbin-Watson stat	2.624964
Prob(F-statistic)	0.165266		

Appendix 11 ARCH-GARCH Model Estimation by Using Maximum Likelihood of Poundsterling (GBP) against US Dollar

Dependent Variable: D(GBP_USD)
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 08/08/17 Time: 14:17
Sample (adjusted): 4/18/2016 9/01/2016
Included observations: 99 after adjustments
Convergence achieved after 450 iterations
MA Backcast: 4/15/2016
Presample variance: backcast (parameter = 0.7)
GARCH = C(4) + C(5)*RESID(-1)^2 + C(6)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.001436	0.000219	-6.568632	0.0000
AR(1)	0.588330	0.081247	7.241280	0.0000
MA(1)	-0.913013	0.024740	-36.90360	0.0000
Variance Equation				
C	2.02E-05	1.72E-05	1.175445	0.2398
RESID(-1)^2	1.186651	0.337745	3.513455	0.0004
GARCH(-1)	0.342789	0.122087	2.807757	0.0050

R-squared	-0.007537	Mean dependent var	-0.000945
Adjusted R-squared	-0.028527	S.D. dependent var	0.022209
S.E. of regression	0.022524	Akaike info criterion	-5.301527
Sum squared resid	0.048704	Schwarz criterion	-5.144247
Log likelihood	268.4256	Hannan-Quinn criter.	-5.237892
Durbin-Watson stat	1.714617		

Inverted AR Roots	.59
Inverted MA Roots	.91

Appendix 12 ARCH-GARCH Model Estimation by Using Maximum Likelihood

US Dollar against Rupiah

Dependent Variable: D(USD_IDR)
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 08/18/17 Time: 22:43
Sample (adjusted): 4/15/2016 9/01/2016
Included observations: 100 after adjustments
Convergence achieved after 47 iterations
MA Backcast: 4/14/2016
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	4.770690	3.323239	1.435554	0.1511
MA(1)	-0.326290	0.142358	-2.292030	0.0219
Variance Equation				
C	482.4052	441.0748	1.093704	0.2741
RESID(-1)^2	1.338500	0.258507	5.177802	0.0000
GARCH(-1)	0.260482	0.094125	2.767408	0.0057

R-squared	0.110476	Mean dependent var	0.945510
Adjusted R-squared	0.101400	S.D. dependent var	94.55776
S.E. of regression	89.63559	Akaike info criterion	11.49005
Sum squared resid	787384.8	Schwarz criterion	11.62031
Log likelihood	-569.5024	Hannan-Quinn criter.	11.54277
Durbin-Watson stat	2.051490		

Inverted MA Roots	.33

Appendix 13 ARCH-LM Test of Poundsterling (GBP) against US Dollar

Heteroskedasticity Test: ARCH

F-statistic	2.246995	Prob. F(12,74)	0.0175
Obs*R-squared	23.23466	Prob. Chi-Square(12)	0.0258

Appendix 14 ARCH-LM Test of US Dollar against Rupiah

Heteroskedasticity Test: ARCH

F-statistic	12.24146	Prob. F(1,97)	0.0007
Obs*R-squared	11.09382	Prob. Chi-Square(1)	0.0009

Appendix 15 Curriculum Vitae

CURRICULUM VITAE

Name : Ratna Sari Supriyanti

NIM : 135030200111060

Place and Date of Birth : Tuban, April 18, 1995

Email : sari.supriyanti@gmail.com

Education

Year	Institution	Location
2001-2007	MI Muhammadiyah 1 KarangAgung	Tuban
2007-2010	SMP Negeri 1 Palang	Tuban
2010-2013	SMA Negeri 2 Tuban	Tuban

Publications or Scientific Work

Year	Title
2014	Analisis Ketersediaan Lahan Bermain Anak sebagai Bentuk Penerapan RTH Di Kelurahan Ketawanggede.
2016	Comparison Of Active And Passive Strategy In Trading Activity (Study On Stock Price Index Of Trade And Property Sector)

Organizational Experience

Year	Organization	Position
2013/2014	Badan Eksekutif Mahasiswa FIA UB	Staff Internship of Kementerian Sosial Masyarakat BEM
2014/2015	Research Study Club	Member
2014/2015	Administratio Choir	Staff of Danus

Scholarship Experience

Year	Description	Institution
2015/2016	Akademic Development Scholarship	DIKTI
2014/2015	Reguler Scholarship	PGN

Committee Experience

Year	Description
2015	1. Staff of Sponsorship on Cacatua Alba Concert (PSM FIA UB) 2. Laison officer MC on Cacatua Alba Concert (PSM FIA UB) 3. Staff of Sponsorship Espriex Business Model Competition ASEAN 2016 (2015-2016
2016	1. Coordinator of Sponsorship on PSM AC goes to LPS-UA Unair 2016 and concert Pre-Competition Goes to LPS-UA Unair 2016 2. Coordinator of publication, decoration, and documentation on Training Organization PSM FIA UB

Achievement

Year	Description
2016	Top 30 Espriex Business Model Competition ASEAN 2016
2016	Silver medal for Choir Competition in UNAIR at Contemporanea and Musica Religiosa Category