



ภาคผนวก ก

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ผลการทดสอบ Unit Root ของตัวแปรทั้งหมดที่ทำการศึกษาดังกล่าวด้วยวิธีการ Augmented

Dickey-Fuller test

ระดับ Level with Intercept

1.) อัตราผลตอบแทนตลาดหุ้นของประเทศไทย (SET)

Null Hypothesis: ST has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-20.65684	0.0000
Test critical values:		
1% level	-3.436432	
5% level	-2.864114	
10% level	-2.568192	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(ST)

Method: Least Squares

Date: 09/22/09 Time: 16:05

Sample (adjusted): 3 1040

Included observations: 1038 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ST(-1)	-0.908521	0.043982	-20.65684	0.0000
D(ST(-1))	-0.101200	0.030935	-3.271359	0.0011
C	-0.391121	0.507393	-0.770844	0.4410

R-squared	0.510287	Mean dependent var	0.013118
Adjusted R-squared	0.509341	S.D. dependent var	23.32021
S.E. of regression	16.33512	Akaike info criterion	8.427398
Sum squared resid	276175.6	Schwarz criterion	8.441690
Log likelihood	-4370.820	Hannan-Quinn criter.	8.432821
F-statistic	539.2415	Durbin-Watson stat	2.003639
Prob(F-statistic)	0.000000		

2.) อัตราผลตอบแทนตลาดหุ้นสเตรทโทมส์ของประเทศสิงคโปร์ (ST)

Null Hypothesis: SS has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-32.44957	0.0000
Test critical values: 1% level	-3.436425	
5% level	-2.864111	
10% level	-2.568190	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SS)

Method: Least Squares

Date: 09/22/09 Time: 16:06

Sample (adjusted): 2 1040

Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SS(-1)	-1.007707	0.031055	-32.44957	0.0000
C	-0.015575	0.042435	-0.367026	0.7137
R-squared	0.503822	Mean dependent var		-0.000418
Adjusted R-squared	0.503343	S.D. dependent var		1.940807
S.E. of regression	1.367762	Akaike info criterion		3.466152
Sum squared resid	1939.992	Schwarz criterion		3.475673
Log likelihood	-1798.666	Hannan-Quinn criter.		3.469764
F-statistic	1052.975	Durbin-Watson stat		1.999610
Prob(F-statistic)	0.000000			

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3.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศไทย (BEX)

Null Hypothesis: BT has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-29.64636	0.0000
Test critical values: 1% level	-3.436425	
5% level	-2.864111	
10% level	-2.568190	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(BT)
 Method: Least Squares
 Date: 09/22/09 Time: 16:07
 Sample (adjusted): 2 1040
 Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BT(-1)	-0.917484	0.030948	-29.64636	0.0000
C	-0.001552	0.017281	-0.089833	0.9284
R-squared	0.458742	Mean dependent var		8.54E-19
Adjusted R-squared	0.458220	S.D. dependent var		0.756785
S.E. of regression	0.557037	Akaike info criterion		1.669554
Sum squared resid	321.7712	Schwarz criterion		1.679074
Log likelihood	-865.3331	Hannan-Quinn criter.		1.673165
F-statistic	878.9065	Durbin-Watson stat		1.996977
Prob(F-statistic)	0.000000			

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4.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศสิงคโปร์ (ABFB)

Null Hypothesis: BS has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-33.52572	0.0000
Test critical values: 1% level	-3.436425	
5% level	-2.864111	
10% level	-2.568190	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(BS)

Method: Least Squares

Date: 09/22/09 Time: 16:07

Sample (adjusted): 2 1040

Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BS(-1)	-1.040246	0.031028	-33.52572	0.0000
C	0.012413	0.009211	1.347539	0.1781
R-squared	0.520124	Mean dependent var		2.39E-05
Adjusted R-squared	0.519661	S.D. dependent var		0.428064
S.E. of regression	0.296676	Akaike info criterion		0.409574
Sum squared resid	91.27352	Schwarz criterion		0.419094
Log likelihood	-210.7735	Hannan-Quinn criter.		0.413185
F-statistic	1123.974	Durbin-Watson stat		2.000847
Prob(F-statistic)	0.000000			

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ระดับ Level with Trend and Intercept

1.) อัตราผลตอบแทนตลาดหุ้นของประเทศไทย (SET)

Null Hypothesis: ST has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 1 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-20.75122	0.0000
Test critical values:		
1% level	-3.966913	
5% level	-3.414148	
10% level	-3.129180	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(ST)
 Method: Least Squares
 Date: 09/22/09 Time: 16:09
 Sample (adjusted): 3 1040
 Included observations: 1038 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ST(-1)	-0.915187	0.044103	-20.75122	0.0000
D(ST(-1))	-0.097873	0.030963	-3.160976	0.0016
C	1.150874	1.016812	1.131846	0.2580
@TREND(1)	-0.002968	0.001697	-1.749366	0.0805

R-squared	0.511732	Mean dependent var	0.013118
Adjusted R-squared	0.510316	S.D. dependent var	23.32021
S.E. of regression	16.31889	Akaike info criterion	8.426370
Sum squared resid	275360.6	Schwarz criterion	8.445426
Log likelihood	-4369.286	Hannan-Quinn criter.	8.433599
F-statistic	361.2300	Durbin-Watson stat	2.002668
Prob(F-statistic)	0.000000		

2.) อัตราผลตอบแทนตลาดหุ้นสตรทโทม้งของประเทศสิงคโปร์ (ST)

Null Hypothesis: SS has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-32.65264	0.0000
Test critical values: 1% level	-3.966905	
5% level	-3.414144	
10% level	-3.129177	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(SS)
 Method: Least Squares
 Date: 09/22/09 Time: 16:10
 Sample (adjusted): 2 1040
 Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SS(-1)	-1.014371	0.031066	-32.65264	0.0000
C	0.179917	0.084857	2.120252	0.0342
@TREND(1)	-0.000376	0.000142	-2.657770	0.0080
R-squared	0.507182	Mean dependent var		-0.000418
Adjusted R-squared	0.506231	S.D. dependent var		1.940807
S.E. of regression	1.363781	Akaike info criterion		3.461282
Sum squared resid	1926.854	Schwarz criterion		3.475563
Log likelihood	-1795.136	Hannan-Quinn criter.		3.466700
F-statistic	533.0978	Durbin-Watson stat		1.999705
Prob(F-statistic)	0.000000			

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3.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศไทย (BEX)

Null Hypothesis: BT has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-29.70121	0.0000
Test critical values: 1% level	-3.966905	
5% level	-3.414144	
10% level	-3.129177	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(BT)
 Method: Least Squares
 Date: 09/22/09 Time: 16:10
 Sample (adjusted): 2 1040
 Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BT(-1)	-0.919800	0.030968	-29.70121	0.0000
C	0.043122	0.034598	1.246387	0.2129
@TREND(1)	-8.59E-05	5.77E-05	-1.490223	0.1365
R-squared	0.459900	Mean dependent var		8.54E-19
Adjusted R-squared	0.458857	S.D. dependent var		0.756785
S.E. of regression	0.556710	Akaike info criterion		1.669337
Sum squared resid	321.0829	Schwarz criterion		1.683618
Log likelihood	-864.2207	Hannan-Quinn criter.		1.674755
F-statistic	441.0810	Durbin-Watson stat		1.996711
Prob(F-statistic)	0.000000			

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4.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศสิงคโปร์ (ABFB)

Null Hypothesis: BS has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-33.50955	0.0000
Test critical values: 1% level	-3.966905	
5% level	-3.414144	
10% level	-3.129177	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(BS)
 Method: Least Squares
 Date: 09/22/09 Time: 16:11
 Sample (adjusted): 2 1040
 Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BS(-1)	-1.040246	0.031043	-33.50955	0.0000
C	0.012208	0.018434	0.662276	0.5079
@TREND(1)	3.93E-07	3.07E-05	0.012810	0.9898
R-squared	0.520124	Mean dependent var		2.39E-05
Adjusted R-squared	0.519197	S.D. dependent var		0.428064
S.E. of regression	0.296820	Akaike info criterion		0.411498
Sum squared resid	91.27350	Schwarz criterion		0.425779
Log likelihood	-210.7734	Hannan-Quinn criter.		0.416916
F-statistic	561.4450	Durbin-Watson stat		2.000847
Prob(F-statistic)	0.000000			

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ระดับ Level without Trend and Intercept

1.) อัตราผลตอบแทนตลาดหุ้นของประเทศไทย (SET)

Null Hypothesis: ST has a unit root
 Exogenous: None
 Lag Length: 1 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-20.64651	0.0000
Test critical values:		
1% level	-2.567192	
5% level	-1.941129	
10% level	-1.616494	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(ST)
 Method: Least Squares
 Date: 09/22/09 Time: 16:13
 Sample (adjusted): 3 1040
 Included observations: 1038 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ST(-1)	-0.907218	0.043941	-20.64651	0.0000
D(ST(-1))	-0.101849	0.030918	-3.294203	0.0010

R-squared	0.510006	Mean dependent var	0.013118
Adjusted R-squared	0.509533	S.D. dependent var	23.32021
S.E. of regression	16.33193	Akaike info criterion	8.426046
Sum squared resid	276334.1	Schwarz criterion	8.435574
Log likelihood	-4371.118	Hannan-Quinn criter.	8.429660
Durbin-Watson stat	2.003840		

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2.) อัตราผลตอบแทนตลาดหุ้นสเตรทโทมิ่งของประเทศสิงคโปร์ (ST)

Null Hypothesis: SS has a unit root

Exogenous: None

Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-32.46103	0.0000
Test critical values: 1% level	-2.567190	
5% level	-1.941128	
10% level	-1.616494	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SS)

Method: Least Squares

Date: 09/22/09 Time: 16:13

Sample (adjusted): 2 1040

Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SS(-1)	-1.007581	0.031040	-32.46103	0.0000
R-squared	0.503757	Mean dependent var		-0.000418
Adjusted R-squared	0.503757	S.D. dependent var		1.940807
S.E. of regression	1.367192	Akaike info criterion		3.464357
Sum squared resid	1940.244	Schwarz criterion		3.469117
Log likelihood	-1798.733	Hannan-Quinn criter.		3.466163
Durbin-Watson stat	1.999605			

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3.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศไทย (BEX)

Null Hypothesis: BT has a unit root

Exogenous: None

Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-29.66040	0.0000
Test critical values: 1% level	-2.567190	
5% level	-1.941128	
10% level	-1.616494	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(BT)

Method: Least Squares

Date: 09/22/09 Time: 16:13

Sample (adjusted): 2 1040

Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BT(-1)	-0.917475	0.030933	-29.66040	0.0000
R-squared	0.458738	Mean dependent var		8.54E-19
Adjusted R-squared	0.458738	S.D. dependent var		0.756785
S.E. of regression	0.556771	Akaike info criterion		1.667636
Sum squared resid	321.7737	Schwarz criterion		1.672397
Log likelihood	-865.3372	Hannan-Quinn criter.		1.669442
Durbin-Watson stat	1.996978			

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4.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศสิงคโปร์ (ABFB)

Null Hypothesis: BS has a unit root

Exogenous: None

Lag Length: 0 (Automatic based on SIC, MAXLAG=21)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-33.48547	0.0000
Test critical values: 1% level	-2.567190	
5% level	-1.941128	
10% level	-1.616494	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(BS)

Method: Least Squares

Date: 09/22/09 Time: 16:14

Sample (adjusted): 2 1040

Included observations: 1039 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BS(-1)	-1.038569	0.031016	-33.48547	0.0000
R-squared	0.519283	Mean dependent var		2.39E-05
Adjusted R-squared	0.519283	S.D. dependent var		0.428064
S.E. of regression	0.296793	Akaike info criterion		0.409398
Sum squared resid	91.43335	Schwarz criterion		0.414159
Log likelihood	-211.6824	Hannan-Quinn criter.		0.411204
Durbin-Watson stat	2.000618			

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ภาคผนวก ข

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การประมาณค่าพารามิเตอร์จากแบบจำลอง ARMA (p,q)

1. อัตราผลตอบแทนตลาดหุ้นของประเทศไทย (SET)

Dependent Variable: ST

Method: Least Squares

Date: 08/21/09 Time: 14:16

Sample (adjusted): 3 1040

Included observations: 1038 after adjustments

Convergence achieved after 5 iterations

MA Backcast: -3 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.435299	0.506384	-0.859623	0.3902
AR(2)	0.103307	0.030930	3.340014	0.0009
MA(6)	-0.100616	0.031044	-3.241066	0.0012
R-squared	0.020053	Mean dependent var		-0.431493
Adjusted R-squared	0.018159	S.D. dependent var		16.40447
S.E. of regression	16.25484	Akaike info criterion		8.417545
Sum squared resid	273467.6	Schwarz criterion		8.431837
Log likelihood	-4365.706	Hannan-Quinn criter.		8.422967
F-statistic	10.58983	Durbin-Watson stat		2.020851
Prob(F-statistic)	0.000028			
Inverted AR Roots	.32	-.32		
Inverted MA Roots	.68	.34+.59i	.34-.59i	-.34+.59i
	-.34-.59i	-.68		

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2.) อัตราผลตอบแทนตลาดหุ้นสเตรทโทมัมของประเทศสิงคโปร์ (ST)

Dependent Variable: SS

Method: Least Squares

Date: 08/21/09 Time: 14:22

Sample (adjusted): 7 1040

Included observations: 1034 after adjustments

Convergence achieved after 8 iterations

MA Backcast: -4 6

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.016700	0.036365	-0.459250	0.6462
AR(6)	-0.068828	0.031152	-2.209438	0.0274
MA(11)	-0.083388	0.031220	-2.670985	0.0077
R-squared	0.013496	Mean dependent var		-0.016636
Adjusted R-squared	0.011583	S.D. dependent var		1.370109
S.E. of regression	1.362151	Akaike info criterion		3.458904
Sum squared resid	1912.973	Schwarz criterion		3.473240
Log likelihood	-1785.253	Hannan-Quinn criter.		3.464344
F-statistic	7.052615	Durbin-Watson stat		1.987006
Prob(F-statistic)	0.000908			
Inverted AR Roots	.55+.32i -.55+.32i	.55-.32i -.55-.32i	-.00-.64i	-.00+.64i
Inverted MA Roots	.80 .33-.73i -.52-.60i	.67-.43i -.11+.79i -.77-.22i	.67+.43i -.11-.79i -.77+.22i	.33+.73i -.52+.60i

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3.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศไทย (BEX)

Dependent Variable: BT

Method: Least Squares

Date: 08/21/09 Time: 14:23

Sample (adjusted): 2 1040

Included observations: 1039 after adjustments

Convergence achieved after 6 iterations

MA Backcast: -8 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001269	0.020353	-0.062354	0.9503
AR(1)	0.070435	0.031140	2.261881	0.0239
MA(10)	0.101001	0.031159	3.241432	0.0012
R-squared	0.017334	Mean dependent var		-0.001692
Adjusted R-squared	0.015437	S.D. dependent var		0.558674
S.E. of regression	0.554345	Akaike info criterion		1.660824
Sum squared resid	318.3612	Schwarz criterion		1.675105
Log likelihood	-859.7983	Hannan-Quinn criter.		1.666242
F-statistic	9.137611	Durbin-Watson stat		1.996420
Prob(F-statistic)	0.000116			
Inverted AR Roots	.07			
Inverted MA Roots	.76+.25i	.76-.25i	.47+.64i	.47-.64i
	.00+.80i	-.00-.80i	-.47+.64i	-.47-.64i
	-.76-.25i	-.76+.25i		

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4.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศสิงคโปร์ (ABFB)

Dependent Variable: BS

Method: Least Squares

Date: 08/21/09 Time: 14:24

Sample (adjusted): 5 1040

Included observations: 1036 after adjustments

Convergence achieved after 10 iterations

MA Backcast: 1 4

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.012103	0.008947	1.352695	0.1764
AR(4)	-0.957358	0.036518	-26.21616	0.0000
MA(4)	0.914736	0.047109	19.41762	0.0000
R-squared	0.018814	Mean dependent var		0.012164
Adjusted R-squared	0.016915	S.D. dependent var		0.296977
S.E. of regression	0.294454	Akaike info criterion		0.395507
Sum squared resid	89.56464	Schwarz criterion		0.409821
Log likelihood	-201.8725	Hannan-Quinn criter.		0.400938
F-statistic	9.903911	Durbin-Watson stat		2.044301
Prob(F-statistic)	0.000055			
Inverted AR Roots	.70+.70i	.70+.70i	-.70-.70i	-.70-.70i
Inverted MA Roots	.69+.69i	.69+.69i	-.69-.69i	-.69-.69i

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การประมาณค่าพารามิเตอร์ (GARCH)

การประมาณค่าพารามิเตอร์จากแบบจำลอง GARCH (ARCH1 GARCH1)

1.) อัตราผลตอบแทนตลาดหุ้นของประเทศไทย (SET)

Dependent Variable: ST
 Method: ML - ARCH (Marquardt) - Normal distribution
 Date: 08/21/09 Time: 16:01
 Sample (adjusted): 3 1040
 Included observations: 1038 after adjustments
 Convergence achieved after 378 iterations
 MA Backcast: -3 2
 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	0.612084	0.490213	1.248609	0.2118
AR(2)	0.047305	0.041419	1.142100	0.2534
MA(6)	-0.105728	0.038088	-2.775879	0.0055

Variance Equation				
C	35.58365	3.391287	10.49267	0.0000
RESID(-1)^2	0.152165	0.026108	5.828246	0.0000
GARCH(-1)	0.705697	0.031125	22.67263	0.0000

R-squared	0.012276	Mean dependent var	-0.431493
Adjusted R-squared	0.007490	S.D. dependent var	16.40447
S.E. of regression	16.34292	Akaike info criterion	8.175598
Sum squared resid	275638.1	Schwarz criterion	8.204183
Log likelihood	-4237.136	Hannan-Quinn criter.	8.186443
F-statistic	2.565160	Durbin-Watson stat	2.008449
Prob(F-statistic)	0.025681		

Inverted AR Roots	.22	-.22		
Inverted MA Roots	.69	.34-.60i	.34+.60i	-.34+.60i
	-.34-.60i	-.69		

2.) อัตราผลตอบแทนตลาดหุ้นสเตรทโทมัมของประเทศสิงคโปร์ (ST)

Dependent Variable: SS

Method: ML - ARCH (Marquardt) - Normal distribution

Date: 08/21/09 Time: 15:56

Sample (adjusted): 7 1040

Included observations: 1034 after adjustments

Convergence achieved after 11 iterations

MA Backcast: -4 6

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	0.066197	0.022598	2.929307	0.0034
AR(6)	-0.060576	0.032376	-1.871012	0.0613
MA(11)	-0.075385	0.032062	-2.351185	0.0187
Variance Equation				
C	0.011970	0.004010	2.985328	0.0028
RESID(-1)^2	0.118100	0.014820	7.968699	0.0000
GARCH(-1)	0.882037	0.013765	64.07619	0.0000
R-squared	0.008535	Mean dependent var		-0.016636
Adjusted R-squared	0.003712	S.D. dependent var		1.370109
S.E. of regression	1.367563	Akaike info criterion		2.901844
Sum squared resid	1922.595	Schwarz criterion		2.930516
Log likelihood	-1494.253	Hannan-Quinn criter.		2.912724
F-statistic	1.769822	Durbin-Watson stat		1.980305
Prob(F-statistic)	0.116290			
Inverted AR Roots	.54+.31i	.54-.31i		
Inverted MA Roots	.79	.67-.43i	.67+.43i	.33+.72i
	.33-.72i	-.11+.78i	-.11-.78i	-.52+.60i
	-.52-.60i	-.76-.22i	-.76+.22i	

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3.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศไทย (BEX)

Dependent Variable: BT
 Method: ML - ARCH (Marquardt) - Normal distribution
 Date: 08/21/09 Time: 15:58
 Sample (adjusted): 2 1040
 Included observations: 1039 after adjustments
 Convergence achieved after 58 iterations
 MA Backcast: -8 1
 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	0.009862	0.011546	0.854183	0.3930
AR(1)	-0.009568	0.034301	-0.278941	0.7803
MA(10)	0.045514	0.037534	1.212614	0.2253
Variance Equation				
C	-7.07E-05	0.000241	-0.292816	0.7697
RESID(-1)^2	0.047412	0.002896	16.37329	0.0000
GARCH(-1)	0.965226	0.003206	301.0780	0.0000
R-squared	0.006293	Mean dependent var		-0.001692
Adjusted R-squared	0.001483	S.D. dependent var		0.558674
S.E. of regression	0.558260	Akaike info criterion		1.088862
Sum squared resid	321.9384	Schwarz criterion		1.117424
Log likelihood	-559.6637	Hannan-Quinn criter.		1.099697
F-statistic	1.308327	Durbin-Watson stat		1.826173
Prob(F-statistic)	0.257966			
Inverted AR Roots	-.01			
Inverted MA Roots	.70+.23i	.70-.23i	.43-.59i	.43+.59i
	-.00-.73i	-.00+.73i	-.43-.59i	-.43+.59i
	-.70+.23i	-.70-.23i		

4.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศสิงคโปร์ (ABFB)

Dependent Variable: BS
 Method: ML - ARCH (Marquardt) - Normal distribution
 Date: 08/21/09 Time: 15:59
 Sample (adjusted): 5 1040
 Included observations: 1036 after adjustments
 Convergence achieved after 16 iterations
 MA Backcast: 1 4
 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	0.016818	0.006445	2.609327	0.0091
AR(4)	0.977513	0.009940	98.33728	0.0000
MA(4)	-0.990024	0.004703	-210.5178	0.0000
Variance Equation				
C	0.001632	0.000377	4.325605	0.0000
RESID(-1)^2	0.042133	0.005421	7.772560	0.0000
GARCH(-1)	0.938956	0.009897	94.87317	0.0000
R-squared	-0.001963	Mean dependent var		0.012164
Adjusted R-squared	-0.006827	S.D. dependent var		0.296977
S.E. of regression	0.297989	Akaike info criterion		0.212556
Sum squared resid	91.46122	Schwarz criterion		0.241184
Log likelihood	-104.1042	Hannan-Quinn criter.		0.223418
Durbin-Watson stat	2.078218			
Inverted AR Roots	.69	.00+.69i	-.00-.69i	-.69
Inverted MA Roots	-.40	.30+.25i	.30+.25i	.30+.25i

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ผลการทดสอบ ARCH Effects

1.) อัตราผลตอบแทนตลาดหุ้นของประเทศไทย (SET)

Heteroskedasticity Test: ARCH

F-statistic	0.071216	Prob. F(2,1033)	0.9313
Obs*R-squared	0.142826	Prob. Chi-Square(2)	0.9311

Test Equation:

Dependent Variable: WGT_RESID^2

Method: Least Squares

Date: 09/01/09 Time: 12:27

Sample (adjusted): 5 1040

Included observations: 1036 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.992365	0.221097	4.488361	0.0000
WGT_RESID^2(-1)	0.011038	0.031113	0.354777	0.7228
WGT_RESID^2(-2)	-0.004125	0.031112	-0.132584	0.8945
R-squared	0.000138	Mean dependent var		0.999259
Adjusted R-squared	-0.001798	S.D. dependent var		6.969403
S.E. of regression	6.975665	Akaike info criterion		6.725624
Sum squared resid	50265.69	Schwarz criterion		6.739938
Log likelihood	-3480.873	Hannan-Quinn criter.		6.731055
F-statistic	0.071216	Durbin-Watson stat		2.000053
Prob(F-statistic)	0.931265			

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2.) อัตราผลตอบแทนตลาดหุ้นสเตรทโทมัมของประเทศสิงคโปร์ (ST)

Heteroskedasticity Test: ARCH

F-statistic	0.790754	Prob. F(2,1029)	0.4538
Obs*R-squared	1.583685	Prob. Chi-Square(2)	0.4530

Test Equation:

Dependent Variable: WGT_RESID^2

Method: Least Squares

Date: 09/01/09 Time: 12:51

Sample (adjusted): 9 1040

Included observations: 1032 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.023272	0.070432	14.52850	0.0000
WGT_RESID^2(-1)	-0.036538	0.031171	-1.172194	0.2414
WGT_RESID^2(-2)	0.012816	0.031171	0.411162	0.6810
R-squared	0.001535	Mean dependent var		0.999584
Adjusted R-squared	-0.000406	S.D. dependent var		1.742428
S.E. of regression	1.742782	Akaike info criterion		3.951745
Sum squared resid	3125.369	Schwarz criterion		3.966103
Log likelihood	-2036.100	Hannan-Quinn criter.		3.957194
F-statistic	0.790754	Durbin-Watson stat		2.000606
Prob(F-statistic)	0.453778			

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3.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศไทย (BEX)

Heteroskedasticity Test: ARCH

F-statistic	0.179377	Prob. F(2,1034)	0.8358
Obs*R-squared	0.359669	Prob. Chi-Square(2)	0.8354

Test Equation:

Dependent Variable: WGT_RESID^2

Method: Least Squares

Date: 09/01/09 Time: 12:29

Sample (adjusted): 4 1040

Included observations: 1037 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.023961	0.150827	6.788999	0.0000
WGT_RESID^2(-1)	-0.002619	0.031090	-0.084240	0.9329
WGT_RESID^2(-2)	-0.018443	0.031090	-0.593234	0.5532
R-squared	0.000347	Mean dependent var		1.002770
Adjusted R-squared	-0.001587	S.D. dependent var		4.639108
S.E. of regression	4.642787	Akaike info criterion		5.911395
Sum squared resid	22288.35	Schwarz criterion		5.925698
Log likelihood	-3062.058	Hannan-Quinn criter.		5.916822
F-statistic	0.179377	Durbin-Watson stat		2.000051
Prob(F-statistic)	0.835817			

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4.) อัตราผลตอบแทนตลาดพันธบัตรของประเทศสิงคโปร์ (ABFB)

Heteroskedasticity Test: ARCH

F-statistic	0.278347	Prob. F(2,1031)	0.7571
Obs*R-squared	0.558013	Prob. Chi-Square(2)	0.7565

Test Equation:

Dependent Variable: WGT_RESID^2

Method: Least Squares

Date: 09/01/09 Time: 12:30

Sample (adjusted): 7 1040

Included observations: 1034 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.074602	0.160883	6.679378	0.0000
WGT_RESID^2(-1)	-0.016159	0.031140	-0.518926	0.6039
WGT_RESID^2(-2)	-0.016950	0.031140	-0.544301	0.5864
R-squared	0.000540	Mean dependent var		1.040137
Adjusted R-squared	-0.001399	S.D. dependent var		4.951935
S.E. of regression	4.955398	Akaike info criterion		6.041729
Sum squared resid	25317.21	Schwarz criterion		6.056065
Log likelihood	-3120.574	Hannan-Quinn criter.		6.047169
F-statistic	0.278347	Durbin-Watson stat		2.000116
Prob(F-statistic)	0.757091			

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ผลการทดสอบโดยแบบจำลอง Multivariate GARCH

**1.) ผลการประมาณค่าโดยแบบจำลอง BEKK (1,1) เพื่อดูการส่งผ่านความผันผวนอย่างมีเงื่อนไข
(Volatility Spillover Effects)**

MV-GARCH, BEKK - Estimation by BFGS

Convergence in 302 Iterations. Final criterion was 0.0000000 < 0.0000100

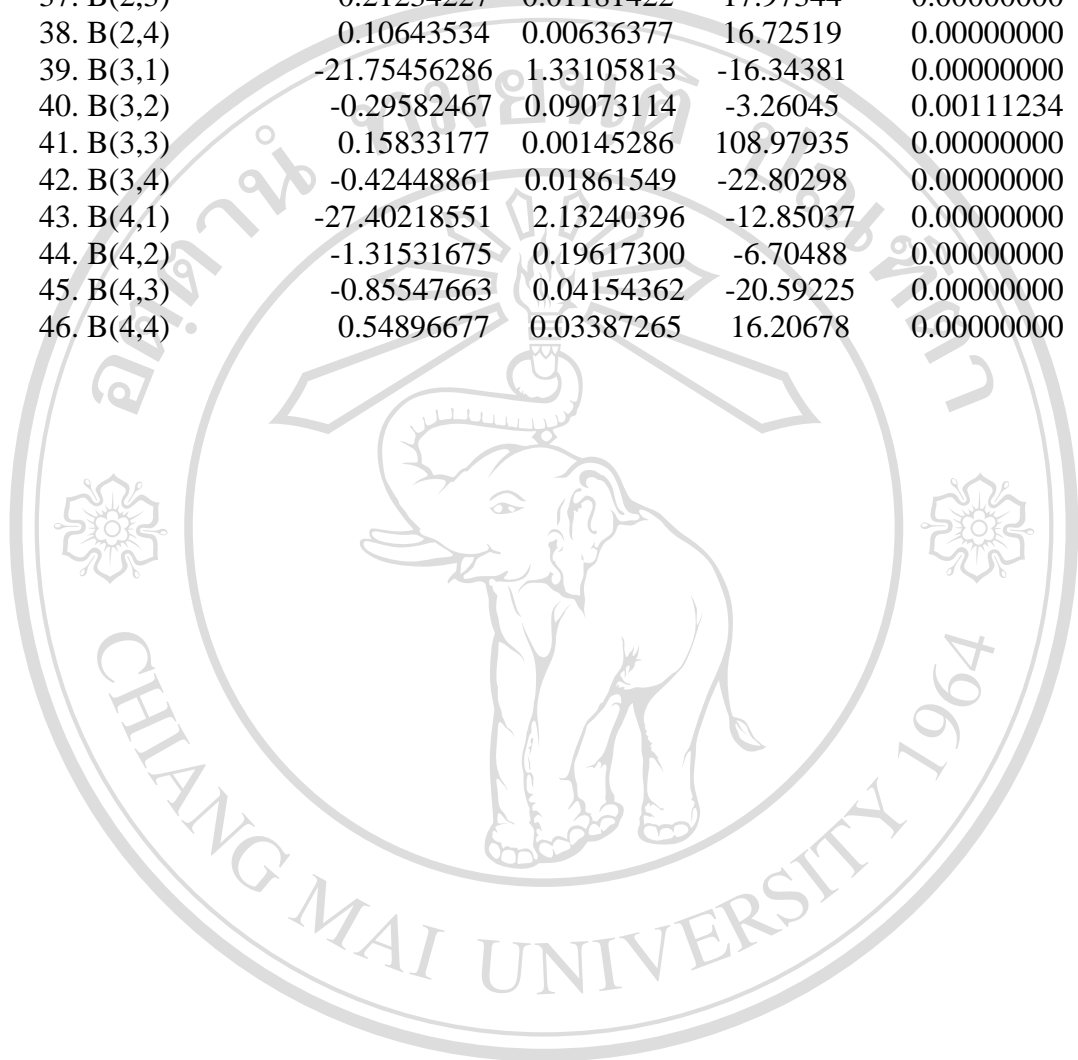
Usable Observations 1040

Log Likelihood -6232.72481704

Variable	Coeff	Std Error	T-Stat	Signif

1. Mean(1)	0.62377767	0.36636816	1.70260	0.02864334
2. Mean(2)	0.08751291	0.02343772	3.73385	0.00018858
3. Mean(3)	0.01684017	0.01055613	1.59530	0.11064566
4. Mean(4)	0.01157012	0.00604693	1.91339	0.05569862
5. C(1,1)	-0.13427653	1.20245281	-0.11167	0.91108597
6. C(2,1)	-0.07591228	0.09743369	-0.77912	0.43591059
7. C(2,2)	-0.01110223	0.10170363	-0.10916	0.91307352
8. C(3,1)	-0.06669420	0.01543928	-4.31977	0.00001562
9. C(3,2)	-0.00893887	0.02646396	-0.33778	0.73553247
10. C(3,3)	-0.05867418	0.01167339	-5.02632	0.00000050
11. C(4,1)	-0.04502947	0.00801183	-5.62037	0.00000002
12. C(4,2)	-0.00626231	0.01504210	-0.41632	0.67717683
13. C(4,3)	-0.03582533	0.00631131	-5.67637	0.00000001
14. C(4,4)	-0.00001402	0.01036711	-0.00135	0.99892112
15. A(1,1)	-0.14333031	0.01665949	8.60352	0.00000000
16. A(1,2)	0.00012200	0.00149185	0.08178	0.93482180
17. A(1,3)	0.00114239	0.00034924	3.27105	0.00107148
18. A(1,4)	0.00013250	0.00023456	0.56489	0.57215058
19. A(2,1)	1.90622450	0.38908824	4.89921	0.00000096
20. A(2,2)	0.30893116	0.02984851	10.34997	0.00000000
21. A(2,3)	0.12258208	0.00802894	15.26754	0.00000000
22. A(2,4)	0.04227854	0.00499486	8.46441	0.00000000
23. A(3,1)	-1.39340647	0.88852080	-1.56823	0.11682707
24. A(3,2)	-0.09563463	0.07306519	-1.30889	0.19057006
25. A(3,3)	0.10458877	0.02195661	4.76343	0.00000190
26. A(3,4)	0.03728962	0.01294227	2.88123	0.00396131
27. A(4,1)	-8.51593646	1.31990928	-6.45191	0.00000000
28. A(4,2)	0.39005984	0.10916423	3.57315	0.00035272
29. A(4,3)	-0.18646116	0.03309094	-5.63481	0.00000002
30. A(4,4)	-0.16799084	0.02269890	-7.40084	0.00000000
31. B(1,1)	-0.19402746	0.03975570	-4.88049	0.00000106
32. B(1,2)	0.07490856	0.00250071	29.95496	0.00000000
33. B(1,3)	-0.00830211	0.00121780	-6.81732	0.00000000

34. B(1,4)	-0.00141564	0.00110867	-1.27687	0.20164658
35. B(2,1)	-5.60065714	0.52306645	-10.70735	0.00000000
36. B(2,2)	0.06211436	0.03560963	1.74431	0.08110440
37. B(2,3)	0.21234227	0.01181422	17.97344	0.00000000
38. B(2,4)	0.10643534	0.00636377	16.72519	0.00000000
39. B(3,1)	-21.75456286	1.33105813	-16.34381	0.00000000
40. B(3,2)	-0.29582467	0.09073114	-3.26045	0.00111234
41. B(3,3)	0.15833177	0.00145286	108.97935	0.00000000
42. B(3,4)	-0.42448861	0.01861549	-22.80298	0.00000000
43. B(4,1)	-27.40218551	2.13240396	-12.85037	0.00000000
44. B(4,2)	-1.31531675	0.19617300	-6.70488	0.00000000
45. B(4,3)	-0.85547663	0.04154362	-20.59225	0.00000000
46. B(4,4)	0.54896677	0.03387265	16.20678	0.00000000



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2.) ผลการประมาณค่าโดยแบบจำลองCCC เพื่อดูความสัมพันธ์อย่างมีเงื่อนไขแบบคงที่ (Constant Conditional Correlation)

MV_GARCH, CC - Estimation by BFGS

Convergence in 74 Iterations. Final criterion was 0.0000000 < 0.0000100

Usable Observations 1040

Log Likelihood -6657.75626749

Variable	Coeff	Std Error	T-Stat	Signif
1. Mean(1)	0.579163	0.428077	1.35294	0.17607431
2. Mean(2)	0.073445	0.023233	3.16120	0.00157120
3. Mean(3)	0.004837	0.014756	0.32779	0.74306774
4. Mean(4)	0.001450	0.000000	20112.54768	0.00000000
5. C(1)	33.886446	1.510155	22.43905	0.00000000
6. C(2)	0.014541	0.005275	2.75650	0.00584232
7. C(3)	0.163572	0.006397	25.57064	0.00000000
8. C(4)	0.098472	0.003722	26.45757	0.00000000
9. A(1)	0.138050	0.020888	6.60893	0.00000000
10. A(2)	0.131901	0.018622	7.08305	0.00000000
11. A(3)	0.306592	0.021965	13.95847	0.00000000
12. A(4)	-0.004794	0.000181	-26.45664	0.00000000
13. B(1)	0.724130	0.012160	59.54813	0.00000000
14. B(2)	0.867987	0.016695	51.99034	0.00000000
15. B(3)	0.162992	0.015131	10.77234	0.00000000
16. B(4)	-0.126217	0.000001	-204926.90991	0.00000000
17. R(2,1)	0.029120	0.026002	1.11993	0.26274528
18. R(3,1)	0.033959	0.019629	1.73003	0.08362534
19. R(3,2)	0.036248	0.023176	1.56403	0.11781122
20. R(4,1)	0.070481	0.006928	10.17277	0.00000000
21. R(4,2)	-0.059657	0.028029	-2.12843	0.03330170
22. R(4,3)	0.207208	0.017675	11.72339	0.00000000

3.) ผลการประมาณค่าโดยแบบจำลองDCC เพื่อดูความสัมพันธ์อย่างมีเงื่อนไขแบบคงที่ (Dynamic Conditional Correlation)

MV_GARCH, DCC - Estimation by BFGS
 CONVERGENCE IN 43 ITERATIONS
 Usable Observations 1040
 Log Likelihood -6753.78708519

Variable	Coeff	Std Error	T-Stat	Signif
1. Mean(1)	0.72843548	0.40000567	1.82106	0.00859729
2. Mean(2)	0.08067795	0.01894233	4.25913	0.00002052
3. Mean(3)	-0.00611107	0.00706943	-0.86444	0.38734884
4. Mean(4)	0.00898220	0.00165150	5.43881	0.00000005
5. C(1)	62.72669035	2.79921929	22.40864	0.00000000
6. C(2)	0.05843340	0.00043891	133.13315	0.00000000
7. C(3)	0.19836702	0.00253093	78.37705	0.00000000
8. C(4)	0.09458917	0.00199746	47.35476	0.00000000
9. A(1)	0.43573782	0.00344971	126.31131	0.00000000
10. A(2)	0.55739296	0.01889105	29.50566	0.00000000
11. A(3)	0.13699834	0.00144672	94.69557	0.00000000
12. A(4)	-0.00456437	0.00018735	-24.36229	0.00000000
13. B(1)	0.40510160	0.02765291	14.64951	0.00000000
14. B(2)	0.61678670	0.00881397	69.97830	0.00000000
15. B(3)	-0.00930586	0.00061517	-15.12736	0.00000000
16. B(4)	-0.10987164	0.01741983	-6.30727	0.00000000
17. DCC(1)	0.00000000	0.00280947	2.13993e-13	1.00000000
18. DCC(2)	0.07467576	0.00285599	26.14703	0.00000000

ประวัติผู้เขียน

ชื่อ

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วัน เดือน ปี เกิด

1 เมษายน 2529

ประวัติการศึกษา

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