ภาคผนวก

ภาคผนวก ก

ผลการทดสอบความนิ่งของข้อมูล (Unit Root Test)

1. ผลการทดสอบความนิ่งของข้อมูลดัชนีSET ด้วยวิธี Augmented Dickey-Fuller test statistic

Null Hypothesis: SET has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=23)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-37.47064	0.0000
Test critical values:	1% level	-3.963930	
	5% level	-3.412689	
	10% level	-3.128315	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SET)

Method: Least Squares

Date: 06/13/14 Time: 15:20

Sample (adjusted): 2 1563

Included observations: 1562 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SET(-1)	-0.947505	0.025287	-37.47064	0.0000
C	-0.000217	0.000726	-0.298783	0.7651
@TREND(1)	6.90E-07	8.05E-07	0.857573	0.3913

R-squared	0.473853	Mean dependent var	1.12E-05
Adjusted R-squared	0.473178	S.D. dependent var	0.019761

S.E. of regression	0.014343	Akaike info criterion	-5.649168
Sum squared resid	0.320727	Schwarz criterion	-5.638885
Log likelihood	4415.000	Hannan-Quinn criter.	-5.645345
F-statistic	702.0248	Durbin-Watson stat	2.005930
Prob(F-statistic)	0.000000		

2. ผลการทดสอบความนิ่งของข้อมูลหลักทรัพย์ BBLด้วยวิธี Augmented Dickey-Fuller test statistic

Null Hypothesis: BBL has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=23)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-38.30944	0.0000
Test critical values:	1% level	-3.963930	
	5% level	-3.412689	
	10% level	-3.128315	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(BBL)

Method: Least Squares

Date: 06/13/14 Time: 15:20

Sample (adjusted): 2 1563

Included observations: 1562 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BBL(-1)	-0.969754	0.025314	-38.30944	0.0000
C	0.000227	0.001053	0.215776	0.8292
@TREND(1)	8.70E-08	1.17E-06	0.074506	0.9406

R-squared	0.484903	Mean dependent var	3.81E-06
Adjusted R-squared	0.484242	S.D. dependent var	0.028971
S.E. of regression	0.020806	Akaike info criterion	-4.905227
Sum squared resid	0.674878	Schwarz criterion	-4.894945
Log likelihood	3833.982	Hannan-Quinn criter.	-4.901404
F-statistic	733.8069	Durbin-Watson stat	1.998235
Prob(F-statistic)	0.000000		

3. ผลการทดสอบความนิ่งของข้อมูล หลักทรัพย์ KBANKด้วยวิธี Augmented Dickey-Fuller test statistic

Null Hypothesis: KBANK has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=23)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-37.85301	0.0000
Test critical values:	1% level	-3.963930	
	5% level	-3.412689	
	10% level	-3.128315	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(KBANK)

Method: Least Squares

Date: 06/13/14 Time: 15:24

Sample (adjusted): 2 1563

Included observations: 1562 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
KBANK(-1)	-0.957643	0.025299	-37.85301	0.0000
C	0.000114	0.001109	0.102893	0.9181
@TREND(1)	4.99E-07	1.23E-06	0.405727	0.6850

R-squared	0.478918	Mean dependent var	8.13E-06
Adjusted R-squared	0.478250	S.D. dependent var	0.030314
S.E. of regression	0.021896	Akaike info criterion	-4.803085
Sum squared resid	0.747455	Schwarz criterion	-4.792802
Log likelihood	3754.209	Hannan-Quinn criter.	-4.799262
F-statistic	716.4265	Durbin-Watson stat	1.994711
Prob(F-statistic)	0.000000		

4. ผลการทดสอบความนิ่งของข้อมูล ดัชนี SET ด้วยวิธี Phillips-Perron test statistic

Null Hypothesis: SET has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 7 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-37.48981	0.0000
Test critical values:	1% level	-3.963930	
	5% level	-3.412689	
	10% level	-3.128315	

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

Residual variance (no correction)	0.000205
HAC corrected variance (Bartlett kernel)	0.000209

Phillips-Perron Test Equation

Dependent Variable: D(SET)

Method: Least Squares

Date: 06/13/14 Time: 15:21

Sample (adjusted): 2 1563

Included observations: 1562 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SET(-1)	-0.947505	0.025287	-37.47064	0.0000
C	-0.000217	0.000726	-0.298783	0.7651
@TREND(1)	6.90E-07	8.05E-07	0.857573	0.3913

R-squared	0.473853	Mean dependent var	1.12E-05
Adjusted R-squared	0.473178	S.D. dependent var	0.019761
S.E. of regression	0.014343	Akaike info criterion	-5.649168
Sum squared resid	0.320727	Schwarz criterion	-5.638885
Log likelihood	4415.000	Hannan-Quinn criter.	-5.645345
F-statistic	702.0248	Durbin-Watson stat	2.005930
Prob(F-statistic)	0.000000		

5. ผลการทดสอบความนิ่งของข้อมูล หลักทรัพย์ BBL ด้วยวิธี Phillips-Perron test statistic

Null Hypothesis: BBL has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 13 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-38.39029	0.0000

Test critical values:	1% level	-3.963930
	5% level	-3.412689
	10% level	-3.128315

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

Residual variance (no correction)	0.000432
HAC corrected variance (Bartlett kernel)	0.000351

Phillips-Perron Test Equation

Dependent Variable: D(BBL)

Method: Least Squares

Date: 06/13/14 Time: 15:18

Sample (adjusted): 2 1563

Included observations: 1562 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BBL(-1)	-0.969754	0.025314	-38.30944	0.0000
C	0.000227	0.001053	0.215776	0.8292
@TREND(1)	8.70E-08	1.17E-06	0.074506	0.9406

R-squared	0.484903	Mean dependent var	3.81E-06
Adjusted R-squared	0.484242	S.D. dependent var	0.028971
S.E. of regression	0.020806	Akaike info criterion	-4.905227
Sum squared resid	0.674878	Schwarz criterion	-4.894945
Log likelihood	3833.982	Hannan-Quinn criter.	-4.901404
F-statistic	733.8069	Durbin-Watson stat	1.998235
Prob(F-statistic)	0.000000		

6. ผลการทดสอบความนิ่งของข้อมูล หลักทรัพย์ KBANK ด้วยวิธีPhillips-Perron test statistic

Null Hypothesis: KBANK has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 28 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-38.19393	0.0000
Test critical values:	1% level	-3.963930	
	5% level	-3.412689	
	10% level	-3.128315	

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

Residual variance (no correction)	0.000479
HAC corrected variance (Bartlett kernel)	0.000331

Phillips-Perron Test Equation

Dependent Variable: D(KBANK)

Method: Least Squares

Date: 06/13/14 Time: 15:25

Sample (adjusted): 2 1563

Included observations: 1562 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
KBANK(-1)	-0.957643	0.025299	-37.85301	0.0000
C	0.000114	0.001109	0.102893	0.9181
@TREND(1)	4.99E-07	1.23E-06	0.405727	0.6850

R-squared	0.478918	Mean dependent var	8.13E-06
Adjusted R-squared	0.478250	S.D. dependent var	0.030314

S.E. of regression	0.021896	Akaike info criterion	-4.803085
Sum squared resid	0.747455	Schwarz criterion	-4.792802
Log likelihood	3754.209	Hannan-Quinn criter.	-4.799262
F-statistic	716.4265	Durbin-Watson stat	1.994711
Prob(F-statistic)	0.000000		

ภาคผนวก ข

ผลการทดสอบข้อมูลโดยใช้การประมาณ Bivariate Generalized Extreme Value Distribution วิธี Bivariate Block Maxima

1. ผลการประมาณ BGEV ของ ดัชนี SET และ หลักทรัพย์ BBL

```
> M1<- fbvevd(ps, model="log")
> M2<- fbvevd(ps, model="alog")
> M3<- fbvevd(ps, model="hr")
> M4<- fbvevd(ps, model="neglog")
> M5<- fbvevd(ps, model="aneglog")
> M6<- fbvevd(ps, model="bilog", std.err = FALSE)
> M7<- fbvevd(ps, model="negbilog", std.err = FALSE)
> M8<- fbvevd(ps, model="ct")
> M9<- fbvevd(ps, model="amix", std.err = FALSE)

> M1
Call: fbvevd(x = ps, model = "log")
Deviance: -1902.802
AIC: -1888.802
Dependence: 0.3182072
Estimates
loc1    scale1    shape1loc2    scale2    shape2dep
0.008942  0.010534  0.007696  0.022697  0.011599  0.071117  0.750000
Standard Errors
loc1     scale1     shape1loc2     scale2     shape2dep
8.415e-04  1.999e-06  4.158e-02  9.080e-04  1.999e-06  6.338e-02  5.365e-02
Optimization Information
  Convergence: successful
  Function Evaluations: 40
```

Gradient Evaluations: 1

> M2

Call: fbvevd(x = ps, model = "alog")

Deviance: -1902.181

AIC: -1884.181

Dependence: 0.3231239

Estimates

loc1 scale1 shape1loc2 scale2 shape2asy1asy2 dep

0.008942 0.010534 0.007696 0.022697 0.011599 0.071117 0.750000 0.750000

0.650000

Standard Errors

loc1 scale1 shape1loc2 scale2 shape2asy1

8.522e-04 1.999e-06 4.104e-02 9.152e-04 1.999e-06 6.227e-02 2.071e-01

asy2dep

2.310e-01 6.307e-02

Optimization Information

Convergence: successful

Function Evaluations: 40

Gradient Evaluations: 1

> M3

Call: fbvevd(x = ps, model = "hr")

Deviance: -1903.927

AIC: -1889.927

Dependence: 0.3173105

Estimates

loc1 scale1 shape1loc2 scale2 shape2dep

0.008942 0.010534 0.007696 0.022697 0.011599 0.071117 1.000000

Standard Errors

loc1 scale1 shape1loc2 scale2 shape2dep

8.430e-04 1.999e-06 4.259e-02 9.127e-04 1.999e-06 6.713e-02 1.099e-01

Optimization Information

Convergence: successful

Function Evaluations: 40

Gradient Evaluations: 1

> M4

Call: fbvevd(x = ps, model = "neglog")

Deviance: -1903.237

AIC: -1889.237

Dependence: 0.3149803

Estimates

loc1 scale1 shape1loc2 scale2 shape2dep

0.008942 0.010534 0.007696 0.022697 0.011599 0.071117 0.600000

Standard Errors

loc1 scale1 shape1loc2 scale2 shape2dep

8.425e-04 1.999e-06 4.185e-02 9.111e-04 1.999e-06 6.605e-02 8.457e-02

Optimization Information

Convergence: successful

Function Evaluations: 40

Gradient Evaluations: 1

> M5

Call: fbvevd(x = ps, model = "aneglog")

Deviance: -1902.29

AIC: -1884.29

Dependence: 0.3153362

Estimates

loc1 scale1 shape1 loc2 scale2 shape2 asy1 asy2

0.008942 0.010534 0.007696 0.022697 0.011599 0.071117 0.750000 0.750000

dep

0.800000

Standard Errors

loc1 scale1 shape1loc2 scale2 shape2asy1

8.502e-04 1.999e-06 4.033e-02 9.170e-04 1.999e-06 6.465e-02 2.149e-01

asy2dep

2.431e-01 1.217e-01

Optimization Information

Convergence: successful

Function Evaluations: 40

Gradient Evaluations: 1

> M6

Call: fbvevd(x = ps, model = "bilog", std.err = FALSE)

Deviance: -1902.802

AIC: -1886.802

Dependence: 0.3182072

Estimates

loc1 scale1 shape1loc2 scale2 shape2 alpha beta

0.008942 0.010534 0.007696 0.022697 0.011599 0.071117 0.750000 0.750000

Optimization Information

Convergence: successful

Function Evaluations: 40

Gradient Evaluations: 1

> M7

Call: fbvevd(x = ps, model = "negbilog", std.err = FALSE)

Deviance: -1903.237

AIC: -1887.237

Dependence: 0.3149803

Estimates

```
loc1    scale1    shape1loc2    scale2    shape2    alpha     beta
0.008942  0.010534  0.007696  0.022697  0.011599  0.071117  1.666667  1.666667
Optimization Information
  Convergence: successful
  Function Evaluations: 31
  Gradient Evaluations: 1

> M8
Call: fbvevd(x = ps, model = "ct")
Deviance: -1912.615
AIC: -1896.615
Dependence: 0.3992916

Estimates
loc1    scale1    shape1loc2    scale2    shape2    alpha     beta
0.008942  0.010534  0.007696  0.022697  0.011599  0.071117  0.600000  0.600000
Standard Errors
loc1    scale1    shape1loc2    scale2    shape2    alpha
8.408e-04  1.999e-06  3.891e-02  9.111e-04  1.999e-06  6.060e-02  2.029e-01
beta
1.890e-01
Optimization Information
  Convergence: successful
  Function Evaluations: 40
  Gradient Evaluations: 1

> M9
Call: fbvevd(x = ps, model = "amix", std.err = FALSE)
Deviance: -1907.597
AIC: -1891.597
Dependence: 0.375
```

```
Estimates
loc1     scale1     shape1loc2     scale2     shape2     alpha
8.942e-03  1.053e-02  7.696e-03  2.270e-02  1.160e-02  7.112e-02  7.500e-01
beta
2.002e-26
Optimization Information
  Convergence: successful
  Function Evaluations: 40
  Gradient Evaluations: 1

>AIC(M1,M2,M3,M4,M5,M6,M7,M8,M9)
df      AIC
M1  7 -1888.802
M2  9 -1884.181
M3  7 -1889.927
M4  7 -1889.237
M5  9 -1884.290
M6  8 -1886.802
M7  8 -1887.237
M8  8 -1896.615
M9  8 -1891.597
```

จากการรันโปรแกรมทั้งหมด 9 โมเดล จะเลือกค่า AIC ที่น้อยที่สุด และดูเงื่อนของโมเดลที่ได้เลือกจากค่า AIC โดยจะดู ค่า แอลฟ้า และ เบต้า

2. ผลการประมาณ BGEV ของ ดัชนี SET และ หลักทรัพย์ KBANK

```
> M1 <- fbvevd(ps, model="log")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for log is singular; use std.err = FALSE
In addition: Warning message:
In fbvlog(x = x, start = start, ...,sym = FALSE, nsloc1 = nsloc1,  :
```

```
negative log-likelihood is infinite at starting values
>  M2<- fbvevd(ps, model="alog")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for alog is singular; use std.err = FALSE
In addition: Warning message:
In fbvalog(x = x, start = start, ...,sym = sym, nsloc1 = nsloc1,  :
negative log-likelihood is infinite at starting values
>  M3<- fbvevd(ps, model="hr")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for hr is singular; use std.err = FALSE
In addition: Warning message:
In fbvhr(x = x, start = start, ...,sym = FALSE, nsloc1 = nsloc1,  :
negative log-likelihood is infinite at starting values
>  M4<- fbvevd(ps, model="neglog")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for neglog is singular; use std.err = FALSE
In addition: Warning message:
In fbvneglog(x = x, start = start, ...,sym = FALSE, nsloc1 = nsloc1,  :
negative log-likelihood is infinite at starting values
>  M5<- fbvevd(ps, model="aneglog")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for aneglog is singular; use std.err = FALSE
In addition: Warning message:
In fbvaneglog(x = x, start = start, ...,sym = sym, nsloc1 = nsloc1,  :
negative log-likelihood is infinite at starting values
>  M6<- fbvevd(ps, model="bilog", std.err = FALSE)
Warning message:
In fbvbilog(x = x, start = start, ...,sym = FALSE, nsloc1 = nsloc1,  :
negative log-likelihood is infinite at starting values
>  M7<- fbvevd(ps, model="negbilog", std.err = FALSE)
Warning message:
```

```
In fbvnegbilog(x = x, start = start, ...,sym = FALSE, nsloc1 = nsloc1,  :
negative log-likelihood is infinite at starting values
>  M8<- fbvevd(ps, model="ct")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for ct is singular; use std.err = FALSE
In addition: Warning message:
In fbvct(x = x, start = start, ...,sym = sym, nsloc1 = nsloc1,  :
negative log-likelihood is infinite at starting values
>  M9<- fbvevd(ps, model="amix", std.err = FALSE)
Warning message:
In fbvamix(x = x, start = start, ...,sym = FALSE, nsloc1 = nsloc1,  :
negative log-likelihood is infinite at starting values

> M6
Call: fbvevd(x = ps, model = "bilog", std.err = FALSE)
Deviance: 2e+06
AIC: 2000016
Dependence: 0.3182072
Estimates
    loc1     scale1     shape1      loc2     scale2     shape2      alpha
1.051e-02  8.686e-03  1.236e-05  2.435e-02  1.302e-02  6.884e-02  7.500e-01
beta
7.500e-01
Optimization Information
  Convergence: successful
  Function Evaluations: 1
  Gradient Evaluations: 1

> M7
Call: fbvevd(x = ps, model = "negbilog", std.err = FALSE)
Deviance: 2e+06
```

AIC: 2000016

Dependence: 0.3149803

Estimates

loc1 scale1 shape1 loc2 scale2 shape2 alpha

1.051e-02 8.686e-03 1.236e-05 2.435e-02 1.302e-02 6.884e-02 1.667e+00

beta

1.667e+00

Optimization Information

Convergence: successful

Function Evaluations: 1

Gradient Evaluations: 1

> M9

Call: fbvevd(x = ps, model = "amix", std.err = FALSE)

Deviance: 2e+06

AIC: 2000016

Dependence: 0.375

Estimates

loc1 scale1 shape1 loc2 scale2 shape2 alpha

1.051e-02 8.686e-03 1.236e-05 2.435e-02 1.302e-02 6.884e-02 7.500e-01

beta

0.000e+00

Optimization Information

Convergence: successful

Function Evaluations: 1

Gradient Evaluations: 1

>AIC(M6,M7,M9)

df AIC

M6 8 2000016

M7 8 2000016

M9 8 2000016

ภาคผนวก ค

ผลการทดสอบข้อมูลโดยใช้การประมาณ Bivariate Generalized Pareto Distribution วิธี Bivariate Threshold Exceedances

1. ผลการประมาณ BGPD ของ ดัชนี SET และ หลักทรัพย์ BBL

Prob 0.90

```
ps<- data.frame(dat[,1], dat[,2])
> u <- apply(ps, 2, quantile, prob=0.90)
>u
  dat...1.   dat...2.
0.02013625 0.03436764
M1 <- fbvpot(ps, u, model = "log")
> M2 <- fbvpot(ps, u, model = "alog")
> M3<- fbvpot(ps, u, model = "hr")
> M4 <- fbvpot(ps, u, model = "neglog")
> M5 <- fbvpot(ps, u, model = "aneglog")
> M6 <- fbvpot(ps, u, model = "bilog")
> M7 <- fbvpot(ps, u, model = "negbilog")
> M8 <- fbvpot(ps, u, model = "ct")
> M9 <- fbvpot(ps, u, model = "amix")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for amix is singular; use std.err = FALSE
```



```
M1
Call: fbvpot(x = ps, threshold = u, model = "log")
Likelihood: censored
Deviance: -156.1475
AIC: -146.1475
Dependence: 0.4749169
```

Threshold: 0.0201 0.0344

Marginal Number Above: 71 70

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0507

Estimates

scale1	shape1	scale2	shape2	dep
0.01207	-0.01089	0.01804	-0.23424	0.60889

Standard Errors

scale1	shape1	scale2	shape2	dep
0.001875	0.111596	0.002789	0.109410	0.045885

Optimization Information

Convergence: successful

Function Evaluations: 79

Gradient Evaluations: 8

> M2

Call: fbvpot(x = ps, threshold = u, model = "alog")

Likelihood: censored

Deviance: -153.5376

AIC: -139.5376

Dependence: 0.4297799

Threshold: 0.0201 0.0344

Marginal Number Above: 71 70

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0507

Estimates

scale1	shape1	scale2	shape2	asy1	asy2	dep
0.01077	0.01038	0.01932	-0.30645	0.93776	0.78859	0.58313

Standard Errors

```
 scale1    shape1    scale2    shape2      asy1      asy2       dep
0.000002  0.067770  0.002896  0.091688  0.197120  0.196695  0.068887
Optimization Information
Convergence: successful
 Function Evaluations: 121
 Gradient Evaluations: 7

> M3
Call: fbvpot(x = ps, threshold = u, model = "hr")
Likelihood: censored
Deviance: -158.9172
AIC: -148.9172
Dependence: 0.4713764
Threshold: 0.0201 0.0344
Marginal Number Above: 71 70
Marginal Proportion Above: 0.1 0.0986
Number Above: 36
Proportion Above: 0.0507
Estimates
 scale1    shape1    scale2    shape2       dep
0.01064   0.02129   0.01824  -0.25808   1.38842
Standard Errors
 scale1    shape1    scale2    shape2       dep
0.000002  0.067565  0.002692  0.101592  0.141479
Optimization Information
 Convergence: successful
Function Evaluations: 95
Gradient Evaluations: 6

> M4
Call: fbvpot(x = ps, threshold = u, model = "neglog")
```

Likelihood: censored

Deviance: -157.8441

AIC: -147.8441

Dependence: 0.4718297

Threshold: 0.0201 0.0344

Marginal Number Above: 71 70

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0507

Estimates

scale1	shape1	scale2	shape2	dep
0.01194	-0.01386	0.01827	-0.24927	0.92280

Standard Errors

scale1	shape1	scale2	shape2	dep
0.000002	0.071805	0.002707	0.103378	0.120337

Optimization Information

Convergence: successful

Function Evaluations: 119

Gradient Evaluations: 11

> M5

Call: fbvpot(x = ps, threshold = u, model = "aneglog")

Likelihood: censored

Deviance: -150.66

AIC: -136.66

Dependence: 0.4497699

Threshold: 0.0201 0.0344

Marginal Number Above: 71 70

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0507

Estimates

scale1 shape1 scale2 shape2 asy1 asy2 dep

0.01028 -0.07787 0.01631 -0.22437 0.99242 0.83509 0.98819

Standard Errors

scale1 shape1 scale2 shape2 asy1 asy2 dep

0.000002 0.044435 0.002633 0.123524 0.214648 0.523502 0.536280

Optimization Information

Convergence: successful

Function Evaluations: 124

Gradient Evaluations: 7

> M6

Call: fbvpot(x = ps, threshold = u, model = "bilog")

Likelihood: censored

Deviance: -154.729

AIC: -142.729

Dependence: 0.3946829

Threshold: 0.0201 0.0344

Marginal Number Above: 71 70

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0507

Estimates

scale1 shape1 scale2 shape2 alpha beta

0.01052 0.08429 0.01592 -0.17281 0.62067 0.73089

Standard Errors

scale1 shape1 scale2 shape2 alpha beta

0.000002 0.097019 0.002461 0.114287 0.097049 0.060469

Optimization Information

Convergence: successful

Function Evaluations: 93

Gradient Evaluations: 6

> M7

Call: fbvpot(x = ps, threshold = u, model = "negbilog")

Likelihood: censored

Deviance: -163.2347

AIC: -151.2347

Dependence: 0.4787199

Threshold: 0.0201 0.0344

Marginal Number Above: 71 70

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0507

Estimates

scale1	shape1	scale2	shape2	alpha	beta
0.01183	0.05249	0.01802	-0.22425	2.62824	0.23586

Standard Errors

scale1	shape1	scale2	shape2	alpha	beta
0.000002	0.092751	0.002821	0.120359	1.150939	0.274770

Optimization Information

Convergence: successful

Function Evaluations: 66

Gradient Evaluations: 14

> M8

Call: fbvpot(x = ps, threshold = u, model = "ct")

Likelihood: censored

Deviance: -156.0852

AIC: -144.0852

Dependence: 0.4147877

Threshold: 0.0201 0.0344

Marginal Number Above: 71 70

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0507

Estimates

scale1 shape1 scale2 shape2 alpha beta

0.01063 0.01490 0.01786 -0.26347 0.62235 0.67718

Standard Errors

scale1 shape1 scale2 shape2 alpha beta

0.000002 0.068991 0.002625 0.093467 0.254749 0.234691

Optimization Information

Convergence: successful

Function Evaluations: 109

Gradient Evaluations: 5

```
>AIC(M1,M2,M3,M4,M5,M6,M7,M8)
df      AIC
M1  5 -146.1475
M2  7 -139.5376
M3  5 -148.9172
M4  5 -147.8441
M5  7 -136.6600
M6  6 -142.7290
M7  6 -151.2347
M8  6 -144.0852
```

2. ผลการประมาณ BGPD ของ ดัชนี SET และ หลักทรัพย์ KBANK

```
u <- apply(ps, 2, quantile, prob=0.90)
>u
dat...1.   dat...2.
0.02013625 0.03670137
```

```
>M1 <- fbvpot(ps, u, model = "log")
> M2 <- fbvpot(ps, u, model = "alog")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for alog is singular; use std.err = FALSE
> M3<- fbvpot(ps, u, model = "hr")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for hr is singular; use std.err = FALSE
> M4 <- fbvpot(ps, u, model = "neglog")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for neglog is singular; use std.err = FALSE
> M5 <- fbvpot(ps, u, model = "aneglog")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for aneglog is singular; use std.err = FALSE
> M6 <- fbvpot(ps, u, model = "bilog")
> M7 <- fbvpot(ps, u, model = "negbilog")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for negbilog is singular; use std.err = FALSE
> M8 <- fbvpot(ps, u, model = "ct")
Error in bvpost.optim(x = x, opt = opt, nm = nm, fixed.param = fixed.param,  :
observed information matrix for ct is singular; use std.err = FALSE
> M9 <- fbvpot(ps, u, model = "amix")
```



```
M1
Call: fbvpot(x = ps, threshold = u, model = "log")
Likelihood: censored
Deviance: -228.2863
AIC: -218.2863
Dependence: 0.3182072
Threshold: 0.0201 0.0367
Marginal Number Above: 73 72
Marginal Proportion Above: 0.1 0.0986
```

Number Above: 36

Proportion Above: 0.0493

Estimates

scale1 shape1 scale2 shape2 dep

1.152e-02 -8.737e-18 1.502e-02 -2.235e-12 7.500e-01

Standard Errors

scale1 shape1 scale2 shape2 dep

0.0000020 0.0002187 0.0024199 0.1537215 0.0514510

Optimization Information

Convergence: successful

Function Evaluations: 146

Gradient Evaluations: 5

> M6

Call: fbvpot(x = ps, threshold = u, model = "bilog")

Likelihood: censored

Deviance: -228.2863

AIC: -216.2863

Dependence: 0.3182072

Threshold: 0.0201 0.0367

Marginal Number Above: 73 72

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0493

Estimates

scale1 shape1 scale2 shape2 alpha beta

1.152e-02 -8.737e-18 1.502e-02 -2.235e-12 7.500e-01 7.500e-01

Standard Errors

scale1 shape1 scale2 shape2 alpha beta

0.0000020 0.0002187 0.0024500 0.1567761 0.1066031 0.0652512

Optimization Information

Convergence: successful

Function Evaluations: 146

Gradient Evaluations: 5

> M9

Call: fbvpot(x = ps, threshold = u, model = "amix")

Likelihood: censored

Deviance: -225.0449

AIC: -213.0449

Dependence: 0.375

Threshold: 0.0201 0.0367

Marginal Number Above: 73 72

Marginal Proportion Above: 0.1 0.0986

Number Above: 36

Proportion Above: 0.0493

Estimates

scale1	shape1	scale2	shape2	alpha	beta
1.152e-02	1.875e-17	1.502e-02	-2.235e-12	7.500e-01	1.658e-16

Standard Errors

scale1	shape1	scale2	shape2	alpha	beta
0.0000020	0.0002323	0.0019511	0.1039934	0.4977097	0.2497877

Optimization Information

Convergence: successful

Function Evaluations: 59

Gradient Evaluations: 2

>AIC(M1,M6,M9)

df	AIC
M1 5	-218.2863
M6 6	-216.2863
M9 6	-213.0449

ประวัติผู้เขียน

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