ภาคผนวก

ภาคผนวก ก

ข้อมูลอัตราผลตอบแทนของตลาดหลักทรัพย์และหลักทรัพย์กลุ่มบันเทิงและสันทนาการ

ภาคผนวก ก

ข้อมูลอัตราผลตอบแทนของตลาดหลักทรัพย์และหลักทรัพย์กลุ่มบันเทิงและสันทนาการ

จำนวน	Q.SETI, Last Trade, Bar	Rm	Ri(bec)	Ri(ubc)	Ri(majo)	Ri(itv)
1	3/1/99	-0.09827	-4.7619	-2.8169		
2	10/1/99	12.25935	0	26.08696		
3	17/1/99	-4.40878	-0.5	9.195402		
4	24/1/99	-1.39856	-2.01005	-27.3684		
5	31/1/99	-3.58054	-7.17949	-1.44928		
6	7/2/99	-6.89807	-5.52486	-5.88235		
7	14/2/99	2.802107	1.754386	0		
8	21/2/99	-3.1258	-3.44828	-4.6875		
9	28/2/99	1.29839	0	-1.63934		
10	7/3/99	-1.38734	6.547619	-8.33333		
11	14/3/99	2.849416	2.234637	3.636364		
12	21/3/99	6.333321	2.185792	8.77193		
13	28/3/99	-0.21214	-2.6738	-4.83871		
14	4/4/99	-2.67368	5.494505	-1.69492		
15	11/4/99	4.158499	2.34375	-1.72414		
16	18/4/99	8.224223	8.684211	7.017544		
17	25/4/99	-0.36518	4.25	3.278689		
18	2/5/99	14.53113	0.247525	47.61905		
19	9/5/99	6.313269	25.76531	5.376344		
20	16/5/99	-2.75418	-8.33333	-3.06122		
21	23/5/99	0.932828	-9.09091	-3.15789		
22	30/5/99	-5.36791	-2.5	-20.6522		
23	6/6/99	5.041885	2.564103	6.849315		
24	13/6/99	6.420131	7	19.23077		

จำนวน	Q.SETI, Last Trade, Bar	Rm	Ri(bec)	Ri(ubc)	Ri(majo)	Ri(itv)
25	20/6/99	2.31728	13.08411	24.73118		
26	27/6/99	4.826426	-9.09091	-2.58621		
27	4/7/99	-1.93435	-3.63636	6.19469		
28	11/7/99	-4.45316	4.716981	-5		
29	18/7/99	-4.13477	-0.9009	-16.6667		
30	25/7/99	-2.61612	0	7.368421		
31	1/8/99	-3.97705	-0.90909	1.960784		
32	8/8/99	-4.32784	-3.66972	3.846154		
33	15/8/99	-3.03405	-4.7619	-2.77778		
34	22/8/99	3.947805	12	0		
35	29/8/99	3.865973	9.821429	2.857143		
36	5/9/99	-5.77436	1.626016	-10.1852		
37	12/9/99	-0.04871	-2.4	7.216495		
38	19/9/99	1.682486	3.278689	2.884615		
39	26/9/99	-12.815	-2.38095	-14.9533		
40	3/10/99	6.601921	-2.43902	2.197802		
41	10/10/99	-3.48943	-2.5	-1.07527		
42	17/10/99	-1.93883	-5.98291	-3.26087		
43	24/10/99	-2.13804	3.636364	-12.3596		
44	31/10/99	4.875912	5.263158	14.10256		
45	7/11/99	5.794466	-2.5	8.988764		
46	14/11/99	3.237984	5.128205	11.34021		
47	21/11/99	-4.73821	-7.31707	-2.77778		
48	28/11/99	0.18467	4.385965	-8.57143		
49	5/12/99	0.511753	-4.20168	14.58333		
50	12/12/99	1.290956	14.03509	22.72727		
51	19/12/99	4.657317	-4.61538	5.185185		
52	26/12/99	5.00091	2.419355	0		
53	2/1/00	4.472241	4.724409	6.338028		
54	9/1/00	-5.93667	-6.76692	-5.96026		
55	16/1/00	4.645827	21.77419	33.80282		
56	23/1/00	0.959169	3.97351	-9.47368		

จำนวน	Q.SETI, Last Trade, Bar	Rm	Ri(bec)	Ri(ubc)	Ri(majo)	Ri(itv)
57	30/1/00	-0.30694	1.910828	-2.32558		
58	6/2/00	-1.48916	3.125	-10.7143		
59	13/2/00	-3.02334	-4.24242	4		
60	20/2/00	-10.4731	-6.96203	-10.8974		
61	27/2/00	-0.41386	1.360544	0.719424		
62	5/3/00	-5.78616	-2.68456	3.571429		
63	12/3/00	5.029622	-2.75862	8.275862		
64	19/3/00	-0.66103	-0.70922	-9.55414		
65	26/3/00	1.105721	-0.71429	4.225352		
66	2/4/00	-0.95012	-0.71942	-18.2432		
67	9/4/00	0.781874	1.086957	0.826446		
68	16/4/00	2.726484	4.779412	8.196721		
69	23/4/00	-4.67849	-1.79856	-8.33333		
70	30/4/00	-1.17957	-3.38346	0.826446		
71	7/5/00	-2.67162	-4.4	-5.7377		
72	14/5/00	-9.02703	2.155172	-16.5217		
73	21/5/00	-0.6567	6.086957	-11.4583		
74	28/5/00	-8.82935	-9.83607	-2.35294		
75	4/6/00	8.368472	6.363636	8.433735		
76	11/6/00	0.610118	-0.8547	6.666667		
77	18/6/00	0.919871	9.482759	-1.04167		
78	25/6/00	-3.24537	-8.66142	-11.5789		
79	2/7/00	-2.28616	-0.86207	-7.14286		
80	9/7/00	-0.86585	6.956522	0		
81	16/7/00	-2.25788	0	-8.97436		
82	23/7/00	-3.14342	3.252033	-12.6761		
83	30/7/00	-4.59988	-7.08661	-8.06452		
84	6/8/00	6.796982	0	10.52632		
85	13/8/00	1.663348	5.084746	9.52381		
86	20/8/00	0.827539	0.806452	1.449275		
87	27/8/00	-3.8782	0.8	-5.71429		
88	3/9/00	1.267765	-3.1746	13.63636		

จำนวน	Q.SETI, Last Trade, Bar	Rm	Ri(bec)	Ri(ubc)	Ri(majo)	Ri(itv)
89	10/9/00	-4.3961	-3.27869	-4		
90	17/9/00	-1.26907	-5.08475	-9.72222		
91	24/9/00	-6.53255	-7.14286	-6.15385		
92	1/10/00	1.149048	2.884615	8.196721		
93	8/10/00	-3.46569	-8.8785	-7.57576		
94	15/10/00	-5.01345	-7.69231	-16.3934		
95	22/10/00	8.78629	16.66667	11.76471		
96	29/10/00	-0.81707	-3.80952	-8.77193		
97	5/11/00	4.920901	12.87129	7.692308		
98	12/11/00	1.872572	-0.87719	-3.57143		
99	19/11/00	0.504716	6.19469	0		
100	26/11/00	-3.15224	-5	-5.55556		
101	3/12/00	-4.05018	-6.14035	-3.92157		
102	10/12/00	-0.06207	1.869159	2.040816		
103	17/12/00	-0.18999	-2.75229	-12		
104	24/12/00	-2.22572	1.886792	-10.9091		
105	31/12/00	0.786252	0	0		
106	7/1/01	6.526992	4.62963	17.34694		
107	14/1/01	8.540239	4.424779	23.91304		
108	21/1/01	1.802406	4.237288	-3.50877		
109	28/1/01	4.819166	-4.87805	23.63636		
110	4/2/01	0.593144	0.854701	-11.7647		
111	11/2/01	-2.80755	0.847458	-5		
112	18/2/01	-2.68539	0	1.754386		
113	25/2/01	2.607592	-0.84034	-3.44828		
114	4/3/01	-5.61004	-5.08475	-14.2857		
115	11/3/01	0.31041	6.25	-2.08333		
116	18/3/01	-4.56026	-5.04202	-8.51064		
117	25/3/01	-0.93857	4.424779	2.325581		
118	1/4/01	0.582257	1.694915	0		
119	8/4/01	-3.39796	-2.70833	-9.09091		
120	15/4/01	3.283459	4.20354	2.5		

จำนวน	Q.SETI, Last Trade, Bar	Rm	Ri(bec)	Ri(ubc)	Ri(majo)	Ri(itv)
121	22/4/01	0.446303	4.166667	7.317073		
122	29/4/01	1.582473	2.391304	-2.27273		
123	6/5/01	3.119014	2.412281	2.325581		
124	13/5/01	1.451964	3.318584	-2.27273		
125	20/5/01	-3.30942	-1.10619	-6.97674		
126	27/5/01	3.482564	2.777778	0		
127	3/6/01	0.305361	-1.8018	5		
128	10/6/01	0.073707	1.834862	-2.38095		
129	17/6/01	3.74011	4.504505	0		
130	24/6/01	-1.63595	0	0		
131	1/7/01	1.217554	4.310345	0		
132	8/7/01	0.722372	6.61157	-2.43902		
133	15/7/01	-3.25351	0	0		
134	22/7/01	-0.64904	-1.55039	0		
135	29/7/01	-3.58023	-8.66142	-4		
136	5/8/01	4.935405	8.62069	3.125		
137	12/8/01	-0.02532	2.380952	-4.0404		
138	19/8/01	2.336404	3.100775	0		
139	26/8/01	2.759477	6.766917	0		
140	2/9/01	1.023572	-6.33803	-1.05263		
141	9/9/01	2.011503	-1.50376	3.191489		
142	16/9/01	-15.839	-6.87023	-23.7113		
143	23/9/01	-4.68587	-6.55738	-18.9189		
144	30/9/01	0.888565	-0.87719	1.666667		
145	7/10/01	1.386078	7.079646	1.639344		
146	14/10/01	1.456138	-9.09091	-1.6129		
147	21/10/01	-0.08773	-0.90909	14.7541		
148	28/10/01	-1.44703	-7.33945	-1.42857		
149	4/11/01	-2.2737	3.960396	-2.89855		
150	11/11/01	-2.22814	-2.85714	5.970149		
151	18/11/01	2.771258	-2.45098	6.338028		

จำนวน	Q.SETI, Last Trade, Bar	Rm	Ri(bec)	Ri(ubc)	Ri(majo)	Ri(itv)
152	25/11/01	7.704863	5.527638	8.609272		
153	2/12/01	1.971227	0	1.829268		
154	9/12/01	0.472537	-4.7619	0		
155	16/12/01	-3.30537	2	-8.38323		
156	23/12/01	0.914966	0	-2.61438		
157	30/12/01	2.413297	0.980392	0		
158	6/1/02	3.909824	1.941748	19.46309		
159	13/1/02	2.160067	6.666667	39.32584		
160	20/1/02	-1.55945	-4.46429	-11.2903		
161	27/1/02	6.761779	0.934579	4.545455		
162	3/2/02	-0.69029	12.03704	11.30435		
163	10/2/02	5.031935	2.479339	11.71875		
164	17/2/02	5.495062	-0.80645	6.293706		
165	24/2/02	-5.81738	-9.7561	5.263158		
166	3/3/02	8.348508	8.108108	10.625		
167	10/3/02	2.627085	2.5	5.649718		
168	17/3/02	-3.39434	0	-13.369		
169	24/3/02	3.158534	6.504065	2.469136		0
170	31/3/02	-3.94544	1.526718	-3.61446		-6.83761
171	7/4/02	-1.05897	-6.01504	0.625		9.174312
172	14/4/02	2.605479	7.438017	3.726708		-0.84034
173	21/4/02	1.812294	8.730159	-1.79641		-1.69492
174	28/4/02	-2.60537	2.255639	-1.82927		-2.58621
175	5/5/02	-0.6349	-2.27273	-5.59006		0.884956
176	12/5/02	2.149448	2.4	2.631579		0.877193
177	19/5/02	-1.01023	-4.03226	15.38462		1.73913
178	26/5/02	3.664434	12.17391	-5		0.854701
179	2/6/02	4.047538	-1.6	7.017544	3.968254	6.779661
180	9/6/02	2.296794	8.943089	-2.73224	-8.39695	-7.14286
181	16/6/02	1.224453	-2.98507	3.932584	0	1.709402
182	23/6/02	-6.38671	-5.38462	-9.18919	0.833333	-5.88235
183	30/6/02	-1.60825	-2.43902	-2.38095	2.479339	0

จำนวน	Q.SETI, Last Trade, Bar	Rm	Ri(bec)	Ri(ubc)	Ri(majo)	Ri(itv)
184	7/7/02	3.08404	5.833333	4.268293	-3.22581	1.785714
185	14/7/02	-0.1097	-3.93701	-1.16959	11.66667	1.754386
186	21/7/02	-1.59487	0.819672	4.142012	7.462687	0
187	28/7/02	-7.051	-12.1951	-3.97727	-1.38889	-4.31034
188	4/8/02	1.088763	4.62963	5.325444	-2.11268	-0.9009
189	11/8/02	-0.91507	-2.65487	-0.5618	5.035971	-1.81818
190	18/8/02	1.623666	9.090909	-2.25989	2.739726	0
191	25/8/02	-1.61381	-5.83333	-2.31214	-2.66667	-0.92593
192	1/9/02	-1.59396	0.884956	-2.36686	-2.73973	-1.86916
193	8/9/02	-2.1071	-3.50877	-9.69697	-4.92958	-2.85714
194	15/9/02	1.018244	0	2.684564	1.481481	0
195	22/9/02	-1.57637	-1.81818	-1.96078	0.729927	-0.98039
196	29/9/02	-3.64133	-6.48148	-10	1.449275	-6.13861
197	6/10/02	0.649507	1.980198	-8.88889	0.714286	0
198	13/10/02	-3.08284	-3.39806	-5.69106	-2.12766	-2.53165
199	20/10/02	3.646981	-2.51256	6.034483	-1.44928	0.865801
200	27/10/02	1.752029	1.030928	8.130081	1.470588	3.433476
201	3/11/02	2.645928	7.142857	4.511278	2.898551	0.414938
202	10/11/02	-0.74927	3.809524	-7.19424	-0.70423	-1.23967
203	17/11/02	0.349293	-4.58716	9.302326	2.836879	-3.76569
204	24/11/02	1.782509	0.961538	4.964539	2.068966	-0.43478
205	1/12/02	0.63708	1.904762	15.54054	1.351351	6.9869
206	8/12/02	0.052072	-1.86916	-5.26316	2.666667	-2.04082
207	15/12/02	-2.43501	0.952381	-4.32099	0.649351	-4.58333
208	22/12/02	-1.73779	-4.71698	-3.22581	-1.29032	-1.74672
209	29/12/02	1.848519	0.990099	-3.33333	5.882353	-4.44444
210	5/1/03	0.21039	-3.43137	3.448276	0.617284	0
211	12/1/03	0.878983	0	8.666667	-4.90798	-3.72093
212	19/1/03	1.884175	4.568528	-4.29448	-3.22581	0
213	26/1/03	2.489375	6.796117	2.564103	-2	-0.48309
214	2/2/03	-1.67153	-1.81818	-4.375	0.680272	0
215	9/2/03	2.416151	2.777778	2.614379	0.675676	9.223301

จำนวน	Q.SETI, Last Trade, Bar	Rm	Ri(bec)	Ri(ubc)	Ri(majo)	Ri(itv)
216	16/2/03	-2.70221	-0.9009	-3.18471	2.013423	13.33333
217	23/2/03	-2.48976	-0.90909	-0.65789	-3.94737	-3.52941
218	2/3/03	0.497875	-5.50459	-3.97351	-1.36986	-4.87805
219	9/3/03	-0.78601	-0.97087	4.137931	-2.77778	1.709402
220	16/3/03	-0.06695	-0.98039	0.662252	2.857143	-1.2605
221	23/3/03	1.501789	0.990099	-1.31579	-0.69444	0.425532
222	30/3/03	1.625323	0.980392	2.666667	-2.7972	1.694915
223	6/4/03	0.649471	2.184466	0	-5.03597	5.208333
224	13/4/03	3.073159	5.19802	3.896104	4.545455	13.86139
225	20/4/03	0.297373	3.186275	-0.625	-1.44928	0
226	27/4/03	-4.15345	2.227723	-3.77358	-2.94118	-5.21739
227	4/5/03	1.820745	8.333333	0	0	0
228	11/5/03	2.41979	6.067961	4.575163	0	8.256881
229	18/5/03	-0.34347	6.904762	-3.125	-1.51515	4.237288
230	25/5/03	3.268927	4.861111	13.54839	1.538462	10.56911
231	1/6/03	2.098508	1.834862	-2.84091	2.272727	2.941176
232	8/6/03	3.563464	0	0.584795	7.407407	-1.42857
233	15/6/03	2.333758	5.405405	-3.48837	-2.75862	2.898551
234	22/6/03	5.769096	0.854701	2.409639	7.801418	20.42254
235	29/6/03	1.071447	0	8.823529	-0.65789	7.602339
236	6/7/03	8.351728	5.084746	-1.08108	5.960265	-1.08696
237	13/7/03	-2.28556	0.806452	-4.91803	-4.375	-6.04396
238	20/7/03	1.785751	2.4	-2.87356	1.960784	-5.26316
239	27/7/03	-1.6591	2.34375	-4.73373	-1.92308	3.703704
240	3/8/03	1.377721	-6.10687	-0.62112	1.30719	0.595238
241	10/8/03	2.372137	4.065041	5	2.580645	8.284024
242	17/8/03	3.147848	1.5625	5.952381	-0.62893	1.092896
243	24/8/03	3.038305	-3.07692	-6.17978	-2.53165	-1.62162
244	31/8/03	0.542252	-2.38095	4.191617	0.649351	13.18681
245	7/9/03	3.738071	-0.81301	4.597701	-1.29032	5.825243
246	14/9/03	1.893118	-1.63934	2.747253	-1.30719	9.174312
247	21/9/03	-0.20409	-0.83333	-4.27807	-1.3245	-9.2437

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248	28/9/03	2.408276	-0.84034	5.586592	0	8.333333
249	5/10/03	-3.87866	-3.38983	-7.93651	-1.34228	-0.8547
250	12/10/03	4.264425	8.77193	0.574713	4.081633	0
251	19/10/03	1.107955	0.806452	-1.14286	-1.30719	14.65517
252	26/10/03	3.508328	-3.2	-1.15607	-2.64901	11.2782
253	2/11/03	4.956916	0	8.77193	23.12925	-4.72973
254	9/11/03	4.933926	0	31.72043	15.46961	6.382979
255	16/11/03	-2.02981	4.958678	-2.44898	-10.5263	-4.66667
256	23/11/03	-6.68563	-12.5984	-10.0418	-8.02139	-4.8951
257	30/11/03	5.314386	-1.8018	5.581395	-2.32558	10.29412
258	7/12/03	2.052528	3.669725	12.3348	1.190476	10
259	14/12/03	2.299448	-1.76991	-8.23529	2.352941	5.454545
260	21/12/03	5.144934	-4.5045	10.04274	-4.5977	46.55172
261	28/12/03	3.629696	-0.9434	15.53398	-5.42169	20.58824

ภาคผนวก ข

ผลการทดสอบ Unit Root

ภาคผนวก ข

ผลการทดสอบ Unit Root

หลักทรัพย์ BEC

1. none

ADF Test Statistic	-11.46919	1% Critical Value*	-2.5735
		5% Critical Value	-1.9408
		10% Critical Value	-1.6163

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(BEC)
Method: Least Squares
Date: 04/22/04 Time: 11:42
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BEC(-1)	-1.069257	0.093229	-11.46919	0.0000
D(BEC(-1))	-0.043892	0.062316	-0.704341	0.4819

R-squared	0.560004	Mean dependent var	-0.003642
Adjusted R-squared	0.558292	S.D. dependent var	8.044757
S.E. of regression	5.346635	Akaike info criterion	6.198504
Sum squared resid	7346.732	Schwarz criterion	6.225970
Log likelihood	-800.7063	F-statistic	327.0964
Durbin-Watson stat	1.999240	Prob(F-statistic)	0.000000

2. intercept

ADF Test Statistic	-11.69407	1% Critical Value*	-3.4572
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(BEC)
Method: Least Squares
Date: 04/22/04 Time: 11:45
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BEC(-1)	-1.099834	0.094051	-11.69407	0.0000
D(BEC(-1))	-0.028616	0.062477	-0.458023	0.6473
C	0.651956	0.335153	1.945251	0.0528

R-squared	0.566413	Mean dependent var	-0.003642
Adjusted R-squared	0.563026	S.D. dependent var	8.044757
S.E. of regression	5.317909	Akaike info criterion	6.191553
Sum squared resid	7239.720	Schwarz criterion	6.232752
Log likelihood	-798.8061	F-statistic	167.2119
Durbin-Watson stat	1.998376	Prob(F-statistic)	0.000000

3. trend and intercept

ADF Test Statistic	-11.68354	1% Critical Value*	-3.9968
		5% Critical Value	-3.4285
		10% Critical Value	-3.1373

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(BEC)
Method: Least Squares
Date: 04/22/04 Time: 11:51
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BEC(-1)	-1.100887	0.094225	-11.68354	0.0000
D(BEC(-1))	-0.028252	0.062579	-0.451457	0.6520
C	0.919611	0.679075	1.354211	0.1769
@TREND(1)	-0.002008	0.004428	-0.453414	0.6506

R-squared	0.566762	Mean dependent var	-0.003642
Adjusted R-squared	0.561665	S.D. dependent var	8.044757
S.E. of regression	5.326180	Akaike info criterion	6.198469
Sum squared resid	7233.888	Schwarz criterion	6.253401
Log likelihood	-798.7017	F-statistic	111.1972
Durbin-Watson stat	1.998622	Prob(F-statistic)	0.000000

หลักทรัพย์ITV

1. **none**

ADF Test Statistic	-3.749484	1% Critical Value*	-2.5735
		5% Critical Value	-1.9408
		10% Critical Value	-1.6163

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ITV)
Method: Least Squares
Date: 04/22/04 Time: 11:53
Sample(adjusted): 173 263
Included observations: 91 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ITV(-1)	-0.586787	0.156498	-3.749484	0.0003
D(ITV(-1))	-0.090910	0.138343	-0.657137	0.5128

R-squared	0.317298	Mean dependent var	0.301383
Adjusted R-squared	0.309628	S.D. dependent var	8.993837
S.E. of regression	7.472858	Akaike info criterion	6.882165
Sum squared resid	4970.081	Schwarz criterion	6.937349
Log likelihood	-311.1385	F-statistic	41.36443
Durbin-Watson stat	1.953168	Prob(F-statistic)	0.000000

2. **intercept**

ADF Test Statistic	-4.229943	1% Critical Value*	-3.4572
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ITV)
Method: Least Squares
Date: 04/22/04 Time: 11:56
Sample(adjusted): 173 263
Included observations: 91 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ITV(-1)	-0.684323	0.161781	-4.229943	0.0001
D(ITV(-1))	-0.037449	0.138832	-0.269740	0.7880
C	1.598655	0.811263	1.970576	0.0519

R-squared	0.346151	Mean dependent var	0.301383
Adjusted R-squared	0.331291	S.D. dependent var	8.993837
S.E. of regression	7.354679	Akaike info criterion	6.860962
Sum squared resid	4760.035	Schwarz criterion	6.943737
Log likelihood	-309.1738	F-statistic	23.29380
Durbin-Watson stat	1.944925	Prob(F-statistic)	0.000000

3. **trend and intercept**

ADF Test Statistic	-5.293002	1% Critical Value*	-3.9968
		5% Critical Value	-3.4285
		10% Critical Value	-3.1373

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ITV)
Method: Least Squares
Date: 04/22/04 Time: 11:58
Sample(adjusted): 173 263
Included observations: 91 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ITV(-1)	-0.909956	0.171917	-5.293002	0.0000
D(ITV(-1))	0.081563	0.138577	0.588576	0.5577
C	-18.56156	6.725409	-2.759915	0.0070
@TREND(1)	0.094566	0.031336	3.017790	0.0033
R-squared	0.408109	Mean dependent var		0.301383
Adjusted R-squared	0.387699	S.D. dependent var		8.993837
S.E. of regression	7.037646	Akaike info criterion		6.783385
Sum squared resid	4308.976	Schwarz criterion		6.893753
Log likelihood	-304.6440	F-statistic		19.99552
Durbin-Watson stat	1.927287	Prob(F-statistic)		0.000000

หลักทรัพย์ Major

1. **none**

ADF Test Statistic	-7.644617	1% Critical Value*	-2.5735
		5% Critical Value	-1.9408
		10% Critical Value	-1.6163

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MAJO)
Method: Least Squares
Date: 04/22/04 Time: 12:02
Sample(adjusted): 183 263
Included observations: 81 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MAJO(-1)	-1.100596	0.143970	-7.644617	0.0000
D(MAJO(-1))	0.254239	0.107208	2.371461	0.0202
R-squared	0.478361	Mean dependent var		0.036732
Adjusted R-squared	0.471758	S.D. dependent var		6.232518
S.E. of regression	4.529811	Akaike info criterion		5.883619
Sum squared resid	1621.016	Schwarz criterion		5.942741
Log likelihood	-236.2866	F-statistic		72.44569
Durbin-Watson stat	1.996175	Prob(F-statistic)		0.000000

2. intercept

ADF Test Statistic	-7.711007	1%	Critical Value*	-3.4572
		5%	Critical Value	-2.8728
		10%	Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MAJO)
Method: Least Squares
Date: 04/22/04 Time: 12:04
Sample(adjusted): 183 263
Included observations: 81 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MAJO(-1)	-1.119436	0.145174	-7.711007	0.0000
D(MAJO(-1))	0.265016	0.107734	2.459898	0.0161
C	0.510437	0.507591	1.005606	0.3177

R-squared	0.485037	Mean dependent var	0.036732
Adjusted R-squared	0.471833	S.D. dependent var	6.232518
S.E. of regression	4.529489	Akaike info criterion	5.895429
Sum squared resid	1600.269	Schwarz criterion	5.984112
Log likelihood	-235.7649	F-statistic	36.73362
Durbin-Watson stat	2.008078	Prob(F-statistic)	0.000000

3. trend and intercept

ADF Test Statistic	-7.654735	1%	Critical Value*	-3.9968
		5%	Critical Value	-3.4285
		10%	Critical Value	-3.1373

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MAJO)
Method: Least Squares
Date: 04/22/04 Time: 12:06
Sample(adjusted): 183 263
Included observations: 81 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MAJO(-1)	-1.117674	0.146011	-7.654735	0.0000
D(MAJO(-1))	0.263959	0.108340	2.436405	0.0171
C	2.510108	4.831260	0.519556	0.6049
@TREND(1)	-0.009011	0.021649	-0.416231	0.6784

R-squared	0.486193	Mean dependent var	0.036732
Adjusted R-squared	0.466175	S.D. dependent var	6.232518
S.E. of regression	4.553686	Akaike info criterion	5.917873
Sum squared resid	1596.676	Schwarz criterion	6.036117
Log likelihood	-235.6738	F-statistic	24.28726
Durbin-Watson stat	2.013712	Prob(F-statistic)	0.000000

หลักทรัพย์ UBC

1. none

ADF Test Statistic	-11.60446	1% Critical Value*	-2.5735
		5% Critical Value	-1.9408
		10% Critical Value	-1.6163

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(UBC)
Method: Least Squares
Date: 04/22/04 Time: 12:16
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UBC(-1)	-0.981405	0.084571	-11.60446	0.0000
D(UBC(-1))	0.055279	0.061763	0.895008	0.3716

R-squared	0.471222	Mean dependent var	-0.040745
Adjusted R-squared	0.469165	S.D. dependent var	12.78004
S.E. of regression	9.311338	Akaike info criterion	7.308035
Sum squared resid	22282.16	Schwarz criterion	7.335500
Log likelihood	-944.3905	F-statistic	229.0267
Durbin-Watson stat	2.010791	Prob(F-statistic)	0.000000

2. intercept

ADF Test Statistic	-11.63516	1% Critical Value*	-3.4572
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(UBC)
Method: Least Squares
Date: 04/22/04 Time: 12:19
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UBC(-1)	-0.987549	0.084876	-11.63516	0.0000
D(UBC(-1))	0.058201	0.061871	0.940679	0.3478
C	0.523451	0.580669	0.901462	0.3682

R-squared	0.472896	Mean dependent var	-0.040745
Adjusted R-squared	0.468778	S.D. dependent var	12.78004
S.E. of regression	9.314734	Akaike info criterion	7.312587
Sum squared resid	22211.65	Schwarz criterion	7.353786
Log likelihood	-943.9801	F-statistic	114.8362
Durbin-Watson stat	2.011058	Prob(F-statistic)	0.000000

3. trend and intercept

ADF Test Statistic	-11.63781	1% Critical Value*	-3.9968
		5% Critical Value	-3.4285
		10% Critical Value	-3.1373

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(UBC)
Method: Least Squares
Date: 04/22/04 Time: 12:21
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UBC(-1)	-0.988861	0.084970	-11.63781	0.0000
D(UBC(-1))	0.058751	0.061930	0.948675	0.3437
C	-0.239454	1.182439	-0.202509	0.8397
@TREND(1)	0.005742	0.007750	0.740863	0.4595

R-squared	0.474028	Mean dependent var	-0.040745
Adjusted R-squared	0.467840	S.D. dependent var	12.78004
S.E. of regression	9.322952	Akaike info criterion	7.318159
Sum squared resid	22163.95	Schwarz criterion	7.373091
Log likelihood	-943.7016	F-statistic	76.60551
Durbin-Watson stat	2.013925	Prob(F-statistic)	0.000000

Rm

1. none

ADF Test Statistic	-9.920291	1% Critical Value*	-2.5735
		5% Critical Value	-1.9408
		10% Critical Value	-1.6163

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RM)
Method: Least Squares
Date: 04/22/04 Time: 12:08
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RM(-1)	-0.839333	0.084608	-9.920291	0.0000
D(RM(-1))	-0.126057	0.060971	-2.067485	0.0397

R-squared	0.497772	Mean dependent var	-0.033319
Adjusted R-squared	0.495817	S.D. dependent var	5.364462
S.E. of regression	3.809080	Akaike info criterion	5.520344
Sum squared resid	3728.836	Schwarz criterion	5.547810
Log likelihood	-712.8846	F-statistic	254.7193
Durbin-Watson stat	1.963428	Prob(F-statistic)	0.000000

2. intercept

ADF Test Statistic	-9.983484	1% Critical Value*	-3.4572
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RM)
Method: Least Squares
Date: 04/22/04 Time: 12:12
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RM(-1)	-0.850380	0.085179	-9.983484	0.0000
D(RM(-1))	-0.120694	0.061146	-1.973881	0.0495
C	0.260241	0.238284	1.092150	0.2758

R-squared	0.500101	Mean dependent var	-0.033319
Adjusted R-squared	0.496195	S.D. dependent var	5.364462
S.E. of regression	3.807652	Akaike info criterion	5.523418
Sum squared resid	3711.543	Schwarz criterion	5.564617
Log likelihood	-712.2826	F-statistic	128.0516
Durbin-Watson stat	1.961230	Prob(F-statistic)	0.000000

3. trend and intercept

ADF Test Statistic	-10.17344	1% Critical Value*	-3.9968
		5% Critical Value	-3.4285
		10% Critical Value	-3.1373

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RM)
Method: Least Squares
Date: 04/22/04 Time: 12:15
Sample(adjusted): 5 263
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RM(-1)	-0.869931	0.085510	-10.17344	0.0000
D(RM(-1))	-0.111316	0.061107	-1.821667	0.0697
C	-0.491030	0.481417	-1.019969	0.3087
@TREND(1)	0.005698	0.003177	1.793473	0.0741

R-squared	0.506328	Mean dependent var	-0.033319
Adjusted R-squared	0.500520	S.D. dependent var	5.364462
S.E. of regression	3.791274	Akaike info criterion	5.518605
Sum squared resid	3665.309	Schwarz criterion	5.573537
Log likelihood	-710.6593	F-statistic	87.17906
Durbin-Watson stat	1.965664	Prob(F-statistic)	0.000000

ภาคผนวก ค

ผลการทดสอบ Frontier

ภาคผนวก ค

ผลการทดสอบ Frontier

หลักทรัพย์ BEC

```
the ols estimates are :

                 coefficient      standard-error    t-ratio

  beta 0         0.33639923E+00  0.29150717E+00  0.11539999E+01
  beta 1         0.66026952E+00  0.74960132E-01  0.88082759E+01
  sigma-squared  0.21995847E+02

log likelihood function =  -0.77269550E+03

the final mle estimates are :

                 coefficient      standard-error    t-ratio

  beta 0         0.35283365E+00  0.33923239E+01  0.10400942E+00
  beta 1         0.66028134E+00  0.69126164E-01  0.95518296E+01
  sigma-squared  0.21827745E+02  0.18318767E+01  0.11915510E+02
  gamma          0.19266288E-04  0.85308899E-02  0.22584148E-02
  mu is restricted to be zero
  eta is restricted to be zero

log likelihood function =  -0.77269550E+03
```

หลักทรัพย์ ITV

the ols estimates are :

	coefficient	standard-error	t-ratio
beta 0	0.11801626E+01	0.73501748E+00	0.16056252E+01
beta 1	0.12180046E+01	0.25605575E+00	0.47567946E+01
sigma-squared	0.46474998E+02		

log likelihood function = -0.30612138E+03

the final mle estimates are :

	coefficient	standard-error	t-ratio
beta 0	0.12068474E+01	0.45026258E+01	0.26803192E+00
beta 1	0.12179432E+01	0.24323826E+00	0.50072026E+01
sigma-squared	0.45467624E+02	0.64029424E+01	0.71010516E+01
gamma	0.23608909E-04	0.88312423E-02	0.26733396E-02

mu is restricted to be zero
eta is restricted to be zero

log likelihood function = -0.30612138E+03

หลักทรัพย์ Major

the ols estimates are :

	coefficient	standard-error	t-ratio
beta 0	-0.71870513E-01	0.51374490E+00	-0.13989533E+00
beta 1	0.55423800E+00	0.17626831E+00	0.31442861E+01
sigma-squared	0.20259735E+02		

log likelihood function = -0.24161802E+03

the final mle estimates are :

	coefficient	standard-error	t-ratio
beta 0	-0.56925670E-01	0.49608695E+01	-0.11474938E-01
beta 1	0.55426194E+00	0.15712879E+00	0.35274373E+01
sigma-squared	0.19771288E+02	0.28365708E+01	0.69701375E+01
gamma	0.17550295E-04	0.12985226E-01	0.13515586E-02

mu is restricted to be zero
eta is restricted to be zero

log likelihood function = -0.24161802E+03

หลักทรัพย์ UBC

```
the ols estimates are :

                 coefficient     standard-error    t-ratio

  beta 0         0.76411154E-01  0.45424893E+00  0.16821427E+00
  beta 1         0.15347668E+01  0.11680866E+00  0.13139153E+02
  sigma-squared  0.53410919E+02

log likelihood function =  -0.88847008E+03

the final mle estimates are :

                 coefficient     standard-error    t-ratio

  beta 0         0.10152088E+00  0.42433173E+01  0.23924885E-01
  beta 1         0.15347581E+01  0.11174130E+00  0.13734923E+02
  sigma-squared  0.53002845E+02  0.44972410E+01  0.11785636E+02
  gamma          0.18337388E-04  0.66850393E-02  0.27430487E-02
  mu is restricted to be zero
  eta is restricted to be zero

log likelihood function =  -0.88847009E+03

the likelihood value is less than that obtained
```

ภาคผนวก ง

ผลการประมาณค่าตัวแปรด้วยวิธีกำลังสองน้อยที่สุด

ภาคผนวก ง

ผลการประมาณค่าตัวแปรด้วยวิธีกำลังสองน้อยที่สุด

หลักทรัพย์ BEC

```
+-----------------------------------------------------------------------------+
| Ordinary    least squares regression    Weighting variable = none           |
| Dep. var. = RIBEC    Mean=  -3.245515322    , S.D.=   61.98286241           |
| Model size: Observations =      262, Parameters =   2, Deg.Fr.=     260     |
| Residuals:  Sum of squares= 6147.530403     , Std.Dev.=          4.86255    |
| Fit:        R-squared=  .993869, Adjusted R-squared =             .99385    |
| Model test: F[  1,    260] =42148.84,    Prob value =             .00000    |
| Diagnostic: Log-L =    -785.1273, Restricted(b=0) Log-L =   -1452.4977     |
|             LogAmemiyaPrCrt.=     3.171, Akaike Info. Crt.=        6.009    |
| Autocorrel: Durbin-Watson Statistic =    2.36895,    Rho =         -.18448  |
| Results Corrected for heteroskedasticity                                    |
| Breusch - Pagan chi-squared =      .8579, with   1 degrees of freedom       |
+-----------------------------------------------------------------------------+
```

Variable	Coefficient	Standard Error	t-ratio	P[|T|>t]	Mean of X
Constant	.2117034791	.30065659	.704	.4820	
RM	.9988842114	.14490645E-02	689.330	.0000	-3.4610806

หลักทรัพย์ UBC

```
+-----------------------------------------------------------------------+
| Ordinary    least squares regression    Weighting variable = none     |
| Dep. var. = RIUBC    Mean=  -3.196778587    , S.D.=    62.46769368    |
| Model size: Observations =      262, Parameters =   2, Deg.Fr.=    260 |
| Residuals:  Sum of squares= 14947.39452     , Std.Dev.=        7.58221 |
| Fit:        R-squared=  .985324, Adjusted R-squared =           .98527 |
| Model test: F[  1,    260] =17455.74,    Prob value =           .00000 |
| Diagnostic: Log-L =    -901.5191, Restricted(b=0) Log-L =   -1454.5391 |
|             LogAmemiyaPrCrt.=    4.059, Akaike Info. Crt.=       6.897 |
| Autocorrel: Durbin-Watson Statistic =    2.04256,   Rho =       -.02128 |
| Results Corrected for heteroskedasticity                              |
| Breusch - Pagan chi-squared =      .8994, with   1 degrees of freedom |
+-----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |t-ratio |P[|T|>t] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant  .2724712480      .46886759          .581   .5617
 RM       1.002360303      .22678827E-02   441.981   .0000 -3.4610806
```

หลักทรัพย์ ITV

```
+-----------------------------------------------------------------------+
| Ordinary    least squares regression    Weighting variable = RMS      |
| Dep. var. = ITV      Mean=   3.017183522    , S.D.=    10.95286731    |
| Model size: Observations =       93, Parameters =   2, Deg.Fr.=     91 |
| Residuals:  Sum of squares= 8782.498337     , Std.Dev.=        9.82400 |
| Fit:        R-squared=  .204254, Adjusted R-squared =           .19551 |
| Model test: F[  1,     91] =    23.36,    Prob value =           .00001 |
| Diagnostic: Log-L =    -391.6369, Restricted(b=0) Log-L =    -402.2610 |
|             LogAmemiyaPrCrt.=    4.591, Akaike Info. Crt.=       8.465 |
| Autocorrel: Durbin-Watson Statistic =    1.61015,   Rho =        .19493 |
+-----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |t-ratio |P[|T|>t] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant  1.895726027      1.0447944          1.814   .0729
 RM        1.018536761      .21074549          4.833   .0000  1.1010476
```

หลักทรัพย์ Major

```
+-----------------------------------------------------------------------+
| Ordinary    least squares regression    Weighting variable = RMS      |
| Dep. var. = MAJOR     Mean=   1.390933321     , S.D.=   6.578476726   |
| Model size: Observations =      83, Parameters =   2, Deg.Fr.=     81 |
| Residuals:  Sum of squares= 2709.971881     , Std.Dev.=       5.78415 |
| Fit:        R-squared=  .236340, Adjusted R-squared =          .22691 |
| Model test: F[  1,     81] =   25.07,    Prob value =          .00000 |
| Diagnostic: Log-L =    -307.9549, Restricted(b=0) Log-L =   -319.1446 |
|             LogAmemiyaPrCrt.=    3.534, Akaike Info. Crt.=      7.469 |
| Autocorrel: Durbin-Watson Statistic =   1.47278,   Rho =       .26361 |
+-----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |t-ratio |P[|T|>t] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant  .6508066518      .65187549          .998   .3211
 RM        .6418963021      .12820478         5.007   .0000  1.1530315

+---------------------------------------------+
| AR(1) Model:      e(t) = rho * e(t-1) + u(t) |
| Initial value of rho        =         .26361 |
| Maximum iterations          =             20 |
| Iter=  2, SS=   1632.290, Log-L=-241.429276 |
| Final value of Rho     =              .25312 |
| Durbin-Watson:  e(t) =               1.49375 |
| Std. Deviation:  e(t) =              4.66909 |
| Std. Deviation:  u(t) =              4.51704 |
| Durbin-Watson:  u(t) =               2.10190 |
| Autocorrelation: u(t) =              -.05095 |
| N[0,1] used for significance levels         |
+---------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant -.1470592541      .68107083         -.216   .8290
 RM        .5746090201      .17639576         3.257   .0011   .79910428
 RHO       .2531241602      .10683519         2.369   .0178
```

ประวัติผู้เขียน

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วันเดือนปีเกิด	5 มีนาคม 2524
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