



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University  
All rights reserved



ภาคผนวก ก

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University

All rights reserved

**ภาคผนวก ก**

ข้อมูลอัตราผลตอบแทนตลาดหลักทรัพย์แห่งประเทศไทย และผลตอบแทนของหลักทรัพย์ในกลุ่มพลังงาน ได้แก่ BANPU EGCMP PTTEP และ RATCH

Week	Rm	Ri(BANPU)	Ri(EGCOMP)	Ri(PTTEP)	Ri(RATCH)
3/1/1999	-0.09827044	0	0	0.787401575	-
10/1/1999	12.25934909	9.751037344	0.787401575	29.6875	-
17/1/1999	-4.408777618	-5.671077505	-3.125	-6.626506024	-
24/1/1999	-1.398564732	-1.803607214	-1.612903226	-5.806451613	-
31/1/1999	-3.580538048	-1.020408163	-1.639344262	-8.904109589	-
7/2/1999	-6.89807438	-4.329896907	-6.666666667	-2.255639098	-
14/2/1999	2.802106841	-1.293103448	-2.678571429	10.76923077	-
21/2/1999	-3.125803849	-0.655021834	-1.834862385	-11.80555556	-
28/2/1999	1.298389598	1.978021978	0.934579439	-3.149606299	-
7/3/1999	-1.387343814	-1.939655172	-0.925925926	2.43902439	-
14/3/1999	2.849415629	-1.318681319	0.934579439	10.31746032	-
21/3/1999	6.333320618	4.008908686	1.851851852	2.158273381	-
28/3/1999	-0.212135223	-1.927194861	-2.727272727	5.633802817	-
4/4/1999	-2.673677469	-5.240174672	0	-1.333333333	-
11/4/1999	4.158498903	0.69124424	6.542056075	0	-
18/4/1999	8.224223465	5.491990847	8.771929825	8.783783784	-
25/4/1999	-0.365181091	6.290672451	-4.838709677	4.968944099	-
2/5/1999	14.53112887	6.734693878	-1.694915254	1.183431953	-
9/5/1999	6.313268612	31.93116635	3.448275862	4.093567251	-
16/5/1999	-2.754176252	6.153846154	-2.883333333	-4.494382022	-
23/5/1999	0.932827983	8	-0.403508772	-3.529411765	-
30/5/1999	-5.367905313	-12.08459215	-2.702702703	-7.317073171	-

Week	Rm	Ri(BANPU)	Ri(EGCOMP)	Ri(PTTEP)	Ri(RATCH)
6/6/1999	5.041884809	3.608247423	-0.925925926	-2.631578947	-
13/6/1999	6.420131383	1.990049751	-2.803738318	-6.081081081	-
20/6/1999	2.317280006	1.788617886	-1.923076923	0	-
27/6/1999	4.826425859	8.626198083	2.941176471	3.597122302	-
4/7/1999	-1.934349616	-6.176470588	1.904761905	2.777777778	-
11/7/1999	-4.45315829	4.702194357	0.934579439	-1.351351351	-
18/7/1999	-4.134773816	-4.491017964	-4.62962963	4.109589041	-
25/7/1999	-2.616118347	-1.880877743	-3.398058252	-0.657894737	-
1/8/1999	-3.977047822	-6.07028754	-3.51758794	-3.311258278	-
8/8/1999	-4.327836518	-7.482993197	-3.125	-2.054794521	-
15/8/1999	-3.034049445	-10.47794118	-1.612903226	-4.895104895	-
22/8/1999	3.947805465	6.776180698	-3.825136612	5.882352941	-
29/8/1999	3.865973443	15.96153846	3.409090909	4.166666667	-
5/9/1999	-5.774360585	-9.784411277	-3.296703297	2	-
12/9/1999	-0.048710336	5.882352941	1.704545455	-1.960784314	-
19/9/1999	1.682485902	0.520833333	0.558659218	3.333333333	-
26/9/1999	-12.81495116	-9.671848014	-8.888888889	-12.25806452	-
3/10/1999	6.601921243	2.868068834	1.829268293	6.617647059	-
10/10/1999	-3.489433404	6.505576208	-1.796407186	4.827586207	-
17/10/1999	-1.938832679	10.29668412	-3.658536585	-8.552631579	-
24/10/1999	-2.138035862	-3.639240506	-4.430379747	-4.316546763	-
31/10/1999	4.87591208	2.791461412	-1.986754967	6.015037594	-
7/11/1999	5.79446608	-5.750798722	2.702702703	-8.510638298	-
14/11/1999	3.237983607	-0.847457627	1.973684211	1.550387597	-
21/11/1999	-4.738206674	-5.128205128	-5.806451613	-8.396946565	-
28/11/1999	0.184670154	-2.702702703	-7.534246575	0	-
5/12/1999	0.511753292	-0.925925926	-2.222222222	-11.666666667	-
12/12/1999	1.290956004	-6.542056075	3.787878788	5.660377358	-
19/12/1999	4.657317213	2	-7.299270073	-0.892857143	-
26/12/1999	5.000910384	4.901960784	7.874015748	3.603603604	-
2/1/2000	4.472240793	2.803738318	2.189781022	0.869565217	-
9/1/2000	-5.936671939	-7.272727273	-10	-10.34482759	-

<b>16/1/2000</b>	4.645827359	0.980392157	3.174603175	4.807692308	-
<b>23/1/2000</b>	0.959169003	25.24271845	15.38461538	18.34862385	-
<b>30/1/2000</b>	-0.30694061	-10.07751938	-4	-7.751937984	-
<b>6/2/2000</b>	-1.489163232	-6.896551724	-8.333333333	-5.042016807	-
<b>13/2/2000</b>	-3.023344814	-5.555555556	-6.060606061	-7.96460177	-
<b>20/2/2000</b>	-10.47311892	-13.7254902	-12.90322581	-11.53846154	-
<b>27/2/2000</b>	-0.413863097	-10.22727273	-7.407407407	10.86956522	-
<b>5/3/2000</b>	-5.786160429	0	-2	-7.352941176	-
<b>12/3/2000</b>	5.029621799	-2.53164557	7.142857143	-3.703703704	-
<b>19/3/2000</b>	-0.661033814	2.597402597	8.571428571	7.692307692	-
<b>26/3/2000</b>	1.105721246	13.92405063	13.15789474	3.06122449	-
<b>2/4/2000</b>	-0.950116291	-2.222222222	-2.325581395	-3.465346535	-
<b>9/4/2000</b>	0.781874481	-4.545454545	7.142857143	3.333333333	-
<b>16/4/2000</b>	2.726484007	14.28571429	14.96062992	2.75	-
<b>23/4/2000</b>	-4.678491864	1.041666667	0.724637681	-4.166666667	-
<b>30/4/2000</b>	-1.179570192	-1.030927835	0.763358779	-1.030927835	-
<b>7/5/2000</b>	-2.671616359	-2.083333333	-4.545454545	-1.5625	-
<b>14/5/2000</b>	-9.027025818	-12.76595745	-10.31746032	1.058201058	-
<b>21/5/2000</b>	-0.656701459	-4.87804878	0	-5.235602094	-
<b>28/5/2000</b>	-8.829353781	-19.23076923	-4.424778761	-5.524861878	-
<b>4/6/2000</b>	8.368471585	6.349206349	5.555555556	11.11111111	-
<b>11/6/2000</b>	0.610118486	10.44776119	7.01754386	0	-
<b>18/6/2000</b>	0.919871073	1.351351351	2.459016393	1.578947368	-
<b>25/6/2000</b>	-3.245374416	-9.333333333	-8.8	-5.18134715	-
<b>2/7/2000</b>	-2.286160031	11.76470588	2.631578947	3.825136612	-
<b>9/7/2000</b>	-0.865854033	-5.263157895	3.418803419	2.631578947	-
<b>16/7/2000</b>	-2.257877784	-2.777777778	0	-4.615384615	-
<b>23/7/2000</b>	-3.143415398	-2.857142857	8.26446281	-3.225806452	-
<b>30/7/2000</b>	-4.59987895	-1.470588235	0	6.111111111	-
<b>6/8/2000</b>	6.796981934	5.970149254	1.526717557	6.806282723	-
<b>13/8/2000</b>	1.663348479	0	0	4.901960784	-
<b>20/8/2000</b>	0.827539456	5.633802817	5.263157895	11.21495327	-
<b>27/8/2000</b>	-3.87820312	-1.333333333	-2.142857143	4.201680672	-

<b>3/9/2000</b>	1.267764959	6.756756757	-2.189781022	-0.806451613	-
<b>10/9/2000</b>	-4.396099366	-3.797468354	-5.223880597	0	-
<b>17/9/2000</b>	-1.269067854	0	-0.787401575	0.81300813	-
<b>24/9/2000</b>	-6.532553922	-2.631578947	-2.380952381	-15.32258065	-
<b>1/10/2000</b>	1.14904789	5.714285714	-0.81300813	0.952380952	-
<b>8/10/2000</b>	-3.465692832	4.285714286	-6.557377049	-4.716981132	-
<b>15/10/2000</b>	-5.013449081	1.449275362	0	1.98019802	-
<b>22/10/2000</b>	8.78628997	9.090909091	6.140350877	10.67961165	-
<b>29/10/2000</b>	-0.817067939	1.470588235	2.479338843	-4.385964912	-
<b>5/11/2000</b>	4.920901072	4.347826087	0.806451613	7.339449541	-
<b>12/11/2000</b>	1.872571568	2.777777778	0	-1.709401709	-
<b>19/11/2000</b>	0.504716417	1.351351351	-0.8	3.47826087	-
<b>26/11/2000</b>	-3.152244686	-5.333333333	-2.419354839	-0.840336134	-
<b>3/12/2000</b>	-4.050178542	-1.408450704	-3.305785124	-7.627118644	-
<b>10/12/2000</b>	-0.062071864	-1.428571429	0.854700855	-6.422018349	-
<b>17/12/2000</b>	-0.189992327	-1.449275362	1.694915254	-4.411764706	-
<b>24/12/2000</b>	-2.225723827	-1.470588235	-1.666666667	-0.512820513	-
<b>31/12/2000</b>	0.786251825	1.492537313	1.694915254	3.092783505	-
<b>7/1/2001</b>	6.526992087	4.411764706	0	4	1.960784314
<b>14/1/2001</b>	8.540238927	2.816901408	4.166666667	2.884615385	1.923076923
<b>21/1/2001</b>	1.802406426	0	3.2	1.869158879	0
<b>28/1/2001</b>	4.819166345	1.369863014	-3.875968992	0.917431193	0
<b>4/2/2001</b>	0.593144251	0	-0.806451613	-0.909090909	0
<b>11/2/2001</b>	-2.807545561	-4.054054054	0.81300813	-8.71559633	-1.886792453
<b>18/2/2001</b>	-2.68539049	18.30985915	1.612903226	0.502512563	0
<b>25/2/2001</b>	2.607591772	8.333333333	3.174603175	8	1.923076923
<b>4/3/2001</b>	-5.610042117	-7.692307692	2.307692308	-7.407407407	0
<b>11/3/2001</b>	0.310410074	15.277777778	0.751879699	1	7.547169811
<b>18/3/2001</b>	-4.560260586	1.408450704	-0.746268657	-0.99009901	1.754385965
<b>25/3/2001</b>	-0.938566553	-1.388888889	-0.751879699	-1	5.172413793
<b>1/4/2001</b>	0.582256675	0	-1.515151515	3.03030303	-1.639344262
<b>8/4/2001</b>	-3.39796191	1.408450704	-1.538461538	-2.450980392	-1.666666667
<b>15/4/2001</b>	3.283458736	1.388888889	11.66666667	3.626943005	1.694915254

22/4/2001	0.446302527	-1.369863014	4.761904762	1.546391753	0
29/4/2001	1.582473224	4.166666667	5.64516129	10.9947644	1.666666667
6/5/2001	3.119013597	8	6.504065041	-5.660377358	3.278688525
13/5/2001	1.451964192	0	4.06504065	3	3.174603175
20/5/2001	-3.309420233	11.11111111	0.833333333	2.912621359	0
27/5/2001	3.482563748	8.888888889	2.479338843	6.603773585	-4.615384615
3/6/2001	0.305361458	-3.06122449	4.032258065	4.424778761	3.225806452
10/6/2001	0.073706979	7.368421053	1.550387597	0	0
17/6/2001	3.740110034	2.941176471	6.106870229	0	3.125
24/6/2001	-1.63595086	0.952380952	2.877697842	5.084745763	3.03030303
1/7/2001	1.217554171	0.943396226	-1.398601399	0.806451613	1.470588235
8/7/2001	0.722371748	0.934579439	0.709219858	1.6	-1.449275362
15/7/2001	-3.253508988	-4.62962963	7.042253521	-2.362204724	-1.470588235
22/7/2001	-0.649043938	-0.970873786	-2.631578947	-1.612903226	1.492537313
29/7/2001	-3.580231965	-1.960784314	-4.054054054	-7.37704918	-2.941176471
5/8/2001	4.935404696	0	0	1.769911504	-1.515151515
12/8/2001	-0.025323626	4	3.521126761	0.869565217	0
19/8/2001	2.336404217	3.846153846	0	0.862068966	0
26/8/2001	2.759477185	4.62962963	0	2.564102564	0
2/9/2001	1.023572236	-2.654867257	0	-2.5	0
9/9/2001	2.011502756	1.818181818	2.721088435	12.82051282	1.538461538
16/9/2001	-15.83898061	-15.17857143	-8.163265306	-1.515151515	-6.060606061
23/9/2001	-4.685872798	-2.105263158	0	-5.384615385	0
30/9/2001	0.888565153	2.150537634	5.511811024	-11.38211382	3.225806452
7/10/2001	1.386077773	3.157894737	3.731343284	2.752293578	-7.8125
14/10/2001	1.456137852	6.382978723	3.597122302	0	3.389830508
21/10/2001	-0.087728533	5.208333333	-2.777777778	-6.25	0
28/10/2001	-1.447032172	4.12371134	-0.714285714	-1.904761905	0
4/11/2001	-2.273702699	3.092783505	-5.035971223	-1.941747573	-3.278688525
11/11/2001	-2.228141638	0.416666667	-0.757575758	-0.99009901	3.050847458
18/11/2001	2.771258169	-0.432900433	0.763358779	4	3.947368421
25/11/2001	7.704862898	6.956521739	5.303030303	2.884615385	0.632911392
2/12/2001	1.971226942	3.658536585	2.158273381	4.672897196	-0.628930818

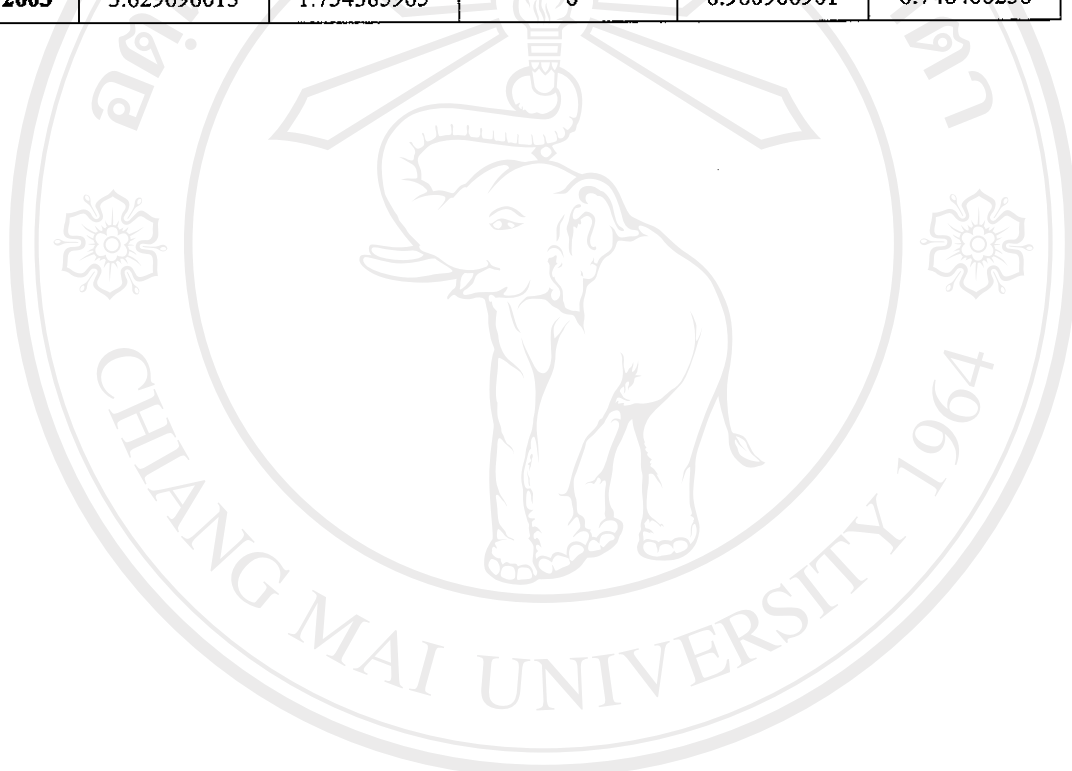
9/12/2001	0.472536514	-1.960784314	0.704225352	-5.357142857	1.265822785
16/12/2001	-3.305374225	-2.8	-2.797202797	-0.943396226	-6.25
23/12/2001	0.914965986	0.411522634	1.438848921	-2.857142857	0.666666667
30/12/2001	2.413296707	2.459016393	0.709219858	3.921568627	0.662251656
6/1/2002	3.909823798	4	4.929577465	0.943396226	6.578947368
13/1/2002	2.160067078	-0.961538462	-2.684563758	2.803738318	0.617283951
20/1/2002	-1.559448196	-1.941747573	2.068965517	-2.727272727	-0.613496933
27/1/2002	6.761778999	3.96039604	0	2.803738318	-0.617283951
3/2/2002	-0.69028587	9.523809524	1.351351351	0	2.48447205
10/2/2002	5.031935394	11.30434783	1.333333333	5.454545455	0
17/2/2002	5.495062078	12.5	7.236842105	0.862068966	1.818181818
24/2/2002	-5.81737724	-6.944444444	-4.90797546	-5.128205128	0.595238095
3/3/2002	8.348508245	14.92537313	3.225806452	6.306306306	2.958579882
10/3/2002	2.627085318	18.83116883	6.25	0	3.448275862
17/3/2002	-3.394337729	-3.825136612	-1.176470588	0	2.777777778
24/3/2002	3.158533529	-2.272727273	1.785714286	5.084745763	1.081081081
31/3/2002	-3.945439367	-4.069767442	-2.923976608	-3.225806452	-6.417112299
7/4/2002	-1.058970422	-5.212121212	-0.602409639	-3.333333333	6.285714286
14/4/2002	2.605478597	10.64935065	5	5.172413793	6.818181818
21/4/2002	1.812293549	-3.333333333	2.45398773	4.310344828	5.617977528
28/4/2002	-2.605368487	-1	4.320987654	0.869565217	5.056179775
5/5/2002	-0.634897992	2.820512821	1.829268293	2.727272727	4.519774011
12/5/2002	2.149447992	-2.53164557	2.469135802	10.28037383	5.714285714
19/5/2002	-1.010230574	-2.597402597	1.863354037	6.25	-1.714285714
26/5/2002	3.664434242	3.333333333	1.829268293	3.539823009	0.581395349
2/6/2002	4.047537555	10.96774194	4.191616766	9.401709402	2.89017341
9/6/2002	2.29679386	2.325581395	-5.172413793	1.5625	0
16/6/2002	1.2244531	1.704545455	3.03030303	-4.615384615	2.247191011
23/6/2002	-6.386708172	-6.703910615	-2.941176471	-6.451612903	-3.846153846
30/6/2002	-1.608248663	-4.191616766	-0.606060606	0.862068966	-1.714285714
7/7/2002	3.084040013	3.125	0.609756098	2.564102564	0.581395349
14/7/2002	-0.10970082	0.606060606	-3.03030303	-3.333333333	-0.578034682
21/7/2002	-1.594870963	-2.409638554	-0.625	-3.448275862	-0.581395349



<b>28/7/2002</b>	-7.051003299	-12.96296296	-10.06289308	-5.357142857	-4.093567251
<b>4/8/2002</b>	1.088763064	-0.709219858	0.699300699	0.943396226	0.609756098
<b>11/8/2002</b>	-0.915073177	0	3.472222222	6.542056075	2.424242424
<b>18/8/2002</b>	1.623665742	8.571428571	-0.67114094	5.263157895	2.958579882
<b>25/8/2002</b>	-1.613808541	-2.631578947	1.351351351	-0.833333333	-2.298850575
<b>1/9/2002</b>	-1.593964699	0	-0.666666667	2.521008403	1.764705882
<b>8/9/2002</b>	-2.107102115	-0.675675676	-2.684563758	0	-1.734104046
<b>15/9/2002</b>	1.018243559	-2.040816327	6.428571429	1.639344262	-0.588235294
<b>22/9/2002</b>	-1.576368517	-1.449275362	4.166666667	-3.225806452	0.591715976
<b>29/9/2002</b>	-3.641326344	-0.769230769	-1.379310345	0.833333333	-0.588235294
<b>6/10/2002</b>	0.649506967	-0.775193798	-0.699300699	2.479338843	1.183431953
<b>13/10/2002</b>	-3.082837525	-3.90625	0.704225352	0.806451613	0.584795322
<b>20/10/2002</b>	3.646981024	0.81300813	0.699300699	-4.8	-1.744186047
<b>27/10/2002</b>	1.752029485	4.032258065	0.694444444	0	-0.591715976
<b>3/11/2002</b>	2.645927873	0.775193798	-0.689655172	5.042016807	1.19047619
<b>10/11/2002</b>	-0.749270318	-1.538461538	0	2.4	0.588235294
<b>17/11/2002</b>	0.349292958	1.5625	2.777777778	-1.5625	1.754385965
<b>24/11/2002</b>	1.782509033	1.538461538	2.027027027	4.761904762	0.574712644
<b>1/12/2002</b>	0.637080449	-0.757575758	-0.662251656	-1.515151515	0
<b>8/12/2002</b>	0.052071802	-0.763358779	0.666666667	4.615384615	2.285714286
<b>15/12/2002</b>	-2.435013284	0.769230769	-1.986754967	-2.205882353	-2.234636872
<b>22/12/2002</b>	-1.737787711	-0.763358779	0	6.015037594	1.714285714
<b>29/12/2002</b>	1.848518561	1.538461538	0.675675676	0.709219858	1.685393258
<b>5/1/2003</b>	0.210390479	-1.515151515	1.342281879	1.408450704	0
<b>12/1/2003</b>	0.878982704	6.923076923	-1.986754967	-8.333333333	0
<b>19/1/2003</b>	1.884174598	-1.438848921	1.351351351	-1.515151515	1.104972376
<b>26/1/2003</b>	2.489375204	0	0	1.538461538	4.918032787
<b>2/2/2003</b>	-1.671533395	0.729927007	-2	-2.272727273	3.645833333
<b>9/2/2003</b>	2.41615085	7.971014493	1.360544218	-4.651162791	-1.005025126
<b>16/2/2003</b>	-2.702208663	0.67114094	9.395973154	0	-0.507614213
<b>23/2/2003</b>	-2.489758957	-0.666666667	0.613496933	0	0.510204082
<b>2/3/2003</b>	0.497875003	2.013422819	-3.658536585	4.87804878	5.583756345
<b>9/3/2003</b>	-0.786006842	-1.315789474	-1.898734177	-0.775193798	0.961538462

<b>16/3/2003</b>	-0.066954919	-0.666666667	-1.935483871	-0.78125	0.476190476
<b>23/3/2003</b>	1.501789345	-1.342281879	-1.973684211	-3.937007874	-2.369668246
<b>30/3/2003</b>	1.62532314	2.040816327	3.355704698	4.098360656	10.9947644
<b>6/4/2003</b>	0.64947095	0.933333333	1.948051948	2.165354331	15.73604061
<b>13/4/2003</b>	3.07315901	5.034013605	7.236842105	5.487804878	10.3286385
<b>20/4/2003</b>	0.297373234	8.933333333	4.430379747	5.487804878	16.36363636
<b>27/4/2003</b>	-4.153446034	-3.522012579	3.125	4.674796748	5.809128631
<b>4/5/2003</b>	1.82074458	8.993288591	12.5	6.352459016	5.833333333
<b>11/5/2003</b>	2.419790066	-0.632911392	5.714285714	5.487804878	-0.418410042
<b>18/5/2003</b>	-0.343466373	0	2.222222222	3.25203252	0.840336134
<b>25/5/2003</b>	3.268926893	-0.636942675	6.703910615	9.448818898	8.333333333
<b>1/6/2003</b>	2.098508346	7.051282051	3.141361257	2.158273381	-1.923076923
<b>8/6/2003</b>	3.563463831	0.598802395	3.553299492	4.929577465	4.901960784
<b>15/6/2003</b>	2.333758216	1.19047619	-1.960784314	6.711409396	-0.934579439
<b>22/6/2003</b>	5.769095965	2.352941176	17	2.51572327	3.773584906
<b>29/6/2003</b>	1.07144656	3.448275862	-5.982905983	-1.226993865	-0.909090909
<b>6/7/2003</b>	8.351727649	6.111111111	4.545454545	0.621118012	12.8440367
<b>13/7/2003</b>	-2.285562414	-3.664921466	-0.869565217	-2.469135802	-6.504065041
<b>20/7/2003</b>	1.785751114	7.608695652	1.754385965	1.898734177	0
<b>27/7/2003</b>	-1.65909862	-5.555555556	-3.448275862	-1.863354037	0
<b>3/8/2003</b>	1.377721433	4.278074866	1.785714286	-1.898734177	-0.869565217
<b>10/8/2003</b>	2.372136502	9.743589744	1.754385965	7.096774194	1.754385965
<b>17/8/2003</b>	3.147847712	6.542056075	8.620689655	2.409638554	-2.586206897
<b>24/8/2003</b>	3.03830545	-5.263157895	-3.968253968	-1.764705882	4.424778761
<b>31/8/2003</b>	0.542252389	2.777777778	-0.826446281	-5.389221557	-1.694915254
<b>7/9/2003</b>	3.738070568	0	0.416666667	5.696202532	3.448275862
<b>14/9/2003</b>	1.893117728	8.108108108	1.271186441	-3.592814371	0
<b>21/9/2003</b>	-0.204088886	3.333333333	1.282051282	0.621118012	0.854700855
<b>28/9/2003</b>	2.40827551	0	0	0.617283951	0.869565217
<b>5/10/2003</b>	-3.878659597	-1.612903226	-5.172413793	-2.45398773	-0.862068966
<b>12/10/2003</b>	4.264424673	15.57377049	4.545454545	3.773584906	2.608695652
<b>19/10/2003</b>	1.107954956	13.4751773	-3.47826087	-3.03030303	-1.694915254
<b>26/10/2003</b>	3.508328356	9.375	9.90990991	10.625	24.13793103

<b>2/11/2003</b>	4.95691588	-1.142857143	1.639344262	6.214689266	-2.777777778
<b>9/11/2003</b>	4.933925953	12.13872832	8.064516129	1.063829787	5.714285714
<b>16/11/2003</b>	-2.029806259	-7.731958763	13.43283582	1.052631579	3.378378378
<b>23/11/2003</b>	-6.685632359	-6.145251397	-7.236842105	-4.6875	-5.882352941
<b>30/11/2003</b>	5.314386406	9.523809524	0.709219858	7.103825137	3.472222222
<b>7/12/2003</b>	2.052528425	9.782608696	4.929577465	3.06122449	7.382550336
<b>14/12/2003</b>	2.299447961	8.910891089	3.355704698	9.900990099	1.875
<b>21/12/2003</b>	5.144934315	3.636363636	-0.649350649	0	0
<b>28/12/2003</b>	3.629696013	1.754385965	0	0.900900901	6.748466258



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่  
 Copyright© by Chiang Mai University  
 All rights reserved



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University  
All rights reserved

## ภาคผนวก ข

### การทดสอบ Unit Root ของตัวแปรต่างๆในแบบจำลอง

#### SET

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: 05/09/04 Time: 23:01

Sample(adjusted): 3 261

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	

#### BANPU

ADF Test Statistic	-10.40310	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(BANP)

Method: Least Squares

Date: 05/09/04 Time: 23:13

Sample(adjusted): 3 261

Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BANP(-1)	-0.862866	0.082943	-10.40310	0.0000
D(BANP(-1))	-0.032159	0.062115	-0.517740	0.6051
R-squared	0.448450	Mean dependent var	-0.030875	
Adjusted R-squared	0.446304	S.D. dependent var	8.693684	
S.E. of regression	6.469037	Akaike info criterion	6.579624	
Sum squared resid	10755.05	Schwarz criterion	6.607090	
Log likelihood	-850.0613	F-statistic	208.9594	
Durbin-Watson stat	1.988626	Prob(F-statistic)	0.000000	

**EGCOMP**

ADF Test Statistic	-10.00395	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(EGCO)

Method: Least Squares

Date: 05/09/04 Time: 23:34

Sample(adjusted): 3 261

Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGCO(-1)	-0.813927	0.081361	-10.00395	0.0000
D(EGCO(-1))	-0.045160	0.062313	-0.724715	0.4693
R-squared	0.427410	Mean dependent var	-0.003040	
Adjusted R-squared	0.425182	S.D. dependent var	5.893039	
S.E. of regression	4.467909	Akaike info criterion	5.839410	
Sum squared resid	5130.288	Schwarz criterion	5.866876	
Log likelihood	-754.2036	F-statistic	191.8380	
Durbin-Watson stat	2.004520	Prob(F-statistic)	0.000000	

**PTTEP**

ADF Test Statistic	-12.00237	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(PTTE)

Method: Least Squares

Date: 05/09/04 Time: 23:21

Sample(adjusted): 3 261

Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PTTE(-1)	-0.996433	0.083020	-12.00237	0.0000
D(PTTE(-1))	-0.007991	0.058662	-0.136218	0.8918
R-squared	0.532766	Mean dependent var	-0.111145	
Adjusted R-squared	0.530948	S.D. dependent var	7.481120	
S.E. of regression	5.123620	Akaike info criterion	6.113291	
Sum squared resid	6746.631	Schwarz criterion	6.140757	
Log likelihood	-789.6712	F-statistic	293.0461	
Durbin-Watson stat	1.936294	Prob(F-statistic)	0.000000	

## RATCH

ADF Test Statistic	-5.872995	1% Critical Value*	-2.5790
		5% Critical Value	-1.9419
		10% Critical Value	-1.6168

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

### Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RATC)

Method: Least Squares

Date: 05/09/04 Time: 23:45

Sample(adjusted): 108 261

Included observations: 154 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RATC(-1)	-0.595644	0.101421	-5.872995	0.0000
D(RATC(-1))	-0.294253	0.078118	-3.766757	0.0002
R-squared	0.467725	Mean dependent var	0.031334	
Adjusted R-squared	0.464223	S.D. dependent var	5.613225	
S.E. of regression	4.108701	Akaike info criterion	5.676993	
Sum squared resid	2565.976	Schwarz criterion	5.716434	
Log likelihood	-435.1284	F-statistic	133.5665	
Durbin-Watson stat	2.044222	Prob(F-statistic)	0.000000	

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University

All rights reserved



ภาคผนวก ก

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University

All rights reserved



ภาคผนวก ก

ผลการวิเคราะห์ถดถอยอย่างง่ายโดยวิธีกำลังสองน้อยที่สุด (OLS)

BANPU

```

-----
Ordinary least squares regression      Weighting variable = none
Dep. var. = RIBANP Mean= 1.310944047 , S.D.= 6.367590864
Model size: Observations = 261, Parameters = 2, Deg.Fr.= 259
Residuals: Sum of squares= 7183.127710 , Std.Dev.= 5.26632
Fit: R-squared= .318619, Adjusted R-squared = .31599
Model test: F[ 1, 259] = 121.11, Prob value = .00000
Diagnostic: Log-L = -802.9465, Restricted(b=0) Log-L = -853.0107
              LogAmemiyaPrCrt.= 3.330, Akaike Info. Crt.= 6.168
Autocorrel: Durbin-Watson Statistic = 1.98256, Rho = .00872
-----
    
```

Variable	Coefficient	Standard Error	t-ratio	P[ T >t]	Mean of X
Constant	.9837288735	.32732999	3.005	.0029	
RM	.9263129746	.84171858E-01	11.005	.0000	.35324473

EGCOMP

```

-----
Ordinary least squares regression      Weighting variable = none
Dep. var. = RIEGCO Mean= .6472133665 , S.D.= 4.449084940
Model size: Observations = 261, Parameters = 2, Deg.Fr.= 259
Residuals: Sum of squares= 3974.947503 , Std.Dev.= 3.91756
Fit: R-squared= .227646, Adjusted R-squared = .22466
Model test: F[ 1, 259] = 76.34, Prob value = .00000
Diagnostic: Log-L = -725.7266, Restricted(b=0) Log-L = -759.4363
              LogAmemiyaPrCrt.= 2.739, Akaike Info. Crt.= 5.576
Autocorrel: Durbin-Watson Statistic = 1.71023, Rho = .14488
-----
    
```

Variable	Coefficient	Standard Error	t-ratio	P[ T >t]	Mean of X
Constant	.4539619715	.24349761	1.864	.0634	
RM	.5470751028	.62614630E-01	8.737	.0000	.35324473

**PTTEP**

```

+-----+
| Ordinary least squares regression      Weighting variable = RMS
| Dep. var. = RIPTTE      Mean=      .8617078334      , S.D.=      8.275943926
| Model size: Observations =      261, Parameters =      2, Deg.Fr.=      259
| Residuals: Sum of squares= 10957.02473      , Std.Dev.=      6.50424
| Fit:      R-squared=      .384704, Adjusted R-squared =      .38233
| Model test: F[ 1,      259] = 161.94,      Prob value =      .00000
| Diagnostic: Log-L = -1036.0491, Restricted(b=0) Log-L = -1099.4266
|      LogAmemiyaPrCrt.=      3.753, Akaike Info. Crt.=      7.954
| Autocorrel: Durbin-Watson Statistic =      2.00978,      Rho =      -.00489
+-----+

```

Variable	Coefficient	Standard Error	t-ratio	P[ T >t]	Mean of X
Constant	.6640092664	.39326558	1.688	.0925	
RM	.6175116124	.63698023E-01	9.694	.0000	.32015360

**RATCH**

```

+-----+
| Ordinary least squares regression      Weighting variable = RMS
| Dep. var. = RATCH      Mean=      .3970211510      , S.D.=      4.972099629
| Model size: Observations =      156, Parameters =      2, Deg.Fr.=      154
| Residuals: Sum of squares= 2107.927476      , Std.Dev.=      3.69971
| Fit:      R-squared=      .449897, Adjusted R-squared =      .44632
| Model test: F[ 1,      154] = 125.95,      Prob value =      .00000
| Diagnostic: Log-L = -523.7967, Restricted(b=0) Log-L = -570.4133
|      LogAmemiyaPrCrt.=      2.629, Akaike Info. Crt.=      6.741
| Autocorrel: Durbin-Watson Statistic =      2.28029,      Rho =      -.14015
+-----+

```

Variable	Coefficient	Standard Error	t-ratio	P[ T >t]	Mean of X
Constant	.6050864669	.29679335	2.039	.0432	
RM	.4261116047	.37968969E-01	11.223	.0000	-.48828831

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่  
 Copyright© by Chiang Mai University  
 All rights reserved

## ประวัติผู้เขียน

ชื่อ	นายรณวัชร ปัญญาคาบ
วัน เดือน ปี เกิด	19 กันยายน 2523
ประวัติการศึกษา	สำเร็จการศึกษามัธยมศึกษาตอนปลาย โรงเรียนปิ่นสร้อยแยดส่ววิทยาลัย ปีการศึกษา 2540 สำเร็จการศึกษาระดับปริญญาวิทยาศาสตรบัณฑิต สาขาวิศวกรรมสิ่งแวดล้อม มหาวิทยาลัยเชียงใหม่ 2544

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่  
Copyright© by Chiang Mai University  
All rights reserved