ภาคผนวก ก

ข้อมูลอัตราผลตอบแทนของตลาดหลักทรัพย์แห่งประเทศไทย
และหลักทรัพย์กลุ่มเครื่องใช้ไฟฟ้า
และคอมพิวเตอร์

ข้อมูลอัตราผลตอบแทนของตลาดหลักทรัพย์แห่งประเทศไทย และหลักทรัพย์กลุ่มเครื่องใช้ไฟฟ้า และคอมพิวเตอร์

Date	Seti	Singer	Cape	Metco	Kye	Ctw	Cei
January 11, 1998	-6.1767	-17.8571	20.0000	0.0000	-5.0000	-22.2717	0.0000
January 18, 1998	9.5347	15.2174	-1.0638	6.6667	3.5088	0.0000	0.0000
January 25, 1998	10.4070	3.7736	17.9211	4.6875	-4.2373	0.0000	0.0000
February 1, 1998	17.1116	25.4545	7.1935	-1.4925	12.3894	0.0000	0.0000
February 8, 1998	8.2285	15.9420	-2.2684	50.0000	28.3465	0.0000	40.0000
February 15, 1998	-6.7185	-6.2500	-2.2244	12.1212	34.9693	-7.4184	22.4490
February 22, 1998	4.3723	-5.3333	13.9466	79.2793	30.0000	0.0000	7.5000
March 1, 1998	1.2629	1.4085	0.0000	40.9326	3.8462	0.0000	16.2791
March 8, 1998	-3.8511	-16.6667	4.0799	-16.1765	-15.1724	-8.0128	5.3333
March 15, 1998	1.2144	6.6667	3.9199	4.3860	10.5691	0.0000	4.4304
March 22, 1998	-2.8177	3.1250	-7.5441	-3.3613	-2.9412	0.0000	3.0303
March 29, 1998	-5.9830	-6.0606	-10.2431	-18.6957	-7.5758	0.0000	-3.5294
April 5, 1998	-5.7231	-3.2258	2.3211	-4.8128	-1.6393	0.0000	-2.4390
April 12, 1998	0.7156	0.0000	-4.4423	-1.1236	-0.8333	0.0000	2.5000
April 19, 1998	-1.6004	0.0000	-2.3739	2.2727	0.0000	0.0000	-2.4390
April 26, 1998	-3.2347	-1.6667	2.4316	2.2222	6.7227	-2.7027	-1.8750
May 3, 1998	-2.9803	-2.5424	-28.3877	-2.7174	3.9370	0.0000	-7.0064
May 10, 1998	-6.2383	0.8696	0.0000	0.5587	1.5152	0.0000	1.3699
May 17, 1998	-4.3968	-0.8621	-20.8564	4.4444	3.7313	-13.3333	-1.3514
May 24, 1998	-3.6840	1.7391	-4.8866	-7.4468	-0.7194	-23.0769	-4.7945
May 31, 1998	-8.4959	-4.2735	-12.1101	-4.0230	-2.8986	-5.0000	-3.5971
June 7, 1998	-2.2820	0.0000	-5.8455	-1.7964	-4.4776	5.2632	-11.1940
June 14, 1998	-12.1920	0.8929	-4.2129	-13.4146	-17.1875	0.0000	5.0420
June 21, 1998	1.7718	-20.3540	-10.8796	-4.9296	2.8302	0.0000	5.6000
June 28, 1998	-6.8022	2.2222	2.5974	-8.8889	-6.4220	5.0000	-5.3030

July 5, 1998	3.3059	8.6957	-7.0886	20.3252	-16.6667	-4.7619	-0.8000
July 12, 1998	0.1900	-1.0000	7.6294	1.3514	1.1765	0.0000	-0.8065
July 19, 1998	7.6643	1.0101	11.8987	-6.6667	1.1628	10.0000	0.0000
July 26, 1998	-6.7190	-7.0000	6.3348	-11.4286	1.1494	2.2727	0.0000
August 2, 1998	-3.1658	-5.3763	-1.9149	2.4194	-2.2727	-2.2222	0.0000
August 9, 1998	-7.1911	-13.6364	-4.1215	-3.9370	-0.5814	-9.0909	0.0000
August 16, 1998	-1.5836	5.2632	-2.2624	-8.1967	-0.5848	0.0000	0.0000
August 23, 1998	-1.9292	0.0000	17.5926	-9.8214	5.2941	30.0000	0.0000
August 30, 1998	-8.4003	-5.0000	-3.7402	-6.9307	-39.1061	0.0000	0.0000
September 6, 1998	-5.2730	-5.2632	1.8405	-19.1489	-1.8349	0.0000	0.0000
September 13, 1998	2.6000	-26.3889	-9.4378	7.8947	4.6729	0.0000	0.0000
September 20, 1998	4.3018	-9.4340	2.2173	9.7561	0.0000	0.0000	0.0000
September 27, 1998	12.2064	56.2500	1.9523	11.1111	0.0000	-20.8511	0.0000
October 4, 1998	1.0565	8.0000	25.9574	-5.0000	0.8929	4.3011	0.0000
October 11, 1998	16.2744	16.0494	1.6892	11.5789	12.3894	-22.6804	0.0000
October 18, 1998	9.1350	19.1489	9.3023	2.8302	3.9370	20.0000	0.0000
October 25, 1998	0.7362	5.3571	2.8875	10.0917	2.2727	-5.5556	0.0000
November 1, 1998	3.0227	1.6949	-2.8065	-4.1667	2.9630	-1.1765	0.0000
November 8, 1998	13.6768	6.6667	-1.3678	-1.7391	-0.7194	0.0000	0.0000
November 15, 1998	-11.4206	-7.0313	-17.4114	-9.7345	-2.8986	-2.3810	0.0000
November 22, 1998	11.4931	4.2017	0.0000	13.7255	-12.6866	17.0732	0.0000
November 29, 1998	0.3119	6.4516	5.2239	3.4483	23.0769	-6.2500	0.0000
December 6, 1998	-9.5044	-0.7576	-23.4043	2.5000	-4.1667	11.1111	0.0000
December 13, 1998	6.7144	8.3969	7.6389	1.6260	-1.4493	0.0000	0.0000
December 20, 1998	-5.1013	-7.7465	-1.9355	-3.2000	-2.9412	5.0000	0.0000
December 27, 1998	4.1647	0.7634	4.1667	-0.8264	12.1212	7.1429	0.0000
January 3, 1999	-0.0983	4.5455	2.1053	0.0000	1.3514	-8.8889	0.0000
January 10, 1999	12.2593	-2.1739	5.9794	14.1667	6.6667	-4.3902	0.0000
January 17, 1999	-4.4088	0.0000	-5.6420	-2.1898	-3.1250	9.6939	0.0000
January 24, 1999	-1.3986	-2.2222	-4.1237	6.7164	2.5806	9.3023	0.0000
January 31, 1999	-3.5805	-3.0303	-4.0860	3.4965	2.5157	6.3830	0.0000

February 7, 1999	-6.8981	2.3438	-10.7623	-15.5405	-11.6564	-14.0000	0.0000
February 14, 1999	2.8021	-5.3435	-2.5126	-3.2000	-2.7778	-4.6512	0.0000
February 21, 1999	-3.1258	0.0000	0.0000	0.8264	-5.0000	0.0000	0.0000
February 28, 1999	1.2984	19.3548	4.8969	8.1967	4.3609	2.4390	0.0000
March 7, 1999	-1.3873	-6.0811	-7.1253	-7.5000	0.7937	-8.5714	0.0000
March 14, 1999	2.8494	3.5971	-7.6720	-4.5045	-8.6614	-8.3333	0.0000
March 21, 1999	6.3333	16.6667	5.4441	1.8868	3.4483	0.0000	0.0000
March 28, 1999	-0.2121	-8.3333	2.7174	-1.8519	-0.8333	-1.1364	0.0000
April 4, 1999	-2.6737	-6.4935	-5.0265	-0.9434	1.6807	0.0000	0.0000
April 11, 1999	4.1585	2.7778	2.5070	0.0000	-2.4793	0.0000	0.0000
April 18, 1999	8.2242	2.7027	2.7174	1.9048	1.6949	0.0000	0.0000
April 25, 1999	-0.3652	0.0000	0.0000	-0.9346	0.0000	1.2658	0.0000
May 2, 1999	14.5311	53.9474	10.3175	0.9434	5.0000	0.0000	0.0000
May 9, 1999	6.3133	-4.2735	13.9089	2.8037	1.5873	11.2500	0.0000
May 16, 1999	-2.7542	-7.1429	0.0000	-2.7273	-1.5625	0.0000	0.0000
May 23, 1999	0.9328	20.1923	-2.1053	-4.6729	4.7619	1.1236	0.0000
May 30, 1999	-5.3679	-20.0000	4.3011	1.9608	0.0000	-2.2222	0.0000
June 6, 1999	5.0419	4.0000	14.0206	0.9615	4.5455	12.5000	0.0000
June 13, 1999	6.4201	8.6538	17.5407	10.4762	5.0725	23.7374	0.0000
June 20, 1999	2.3173	2.6549	16.3077	0.0000	10.3448	4.0816	0.0000
June 27, 1999	4.8264	37.9310	14.1534	7.7586	8.1250	23.5294	0.0000
July 4, 1999	-1.9343	-3.7500	-14.6002	0.8000	15.6069	-3.1746	0.0000
July 11, 1999	-4.4532	-2.5974	-3.9349	1.5873	19.0000	-3.2787	0.0000
July 18, 1999	-4.1348	-4.0000	-6.9209	-7.0313	-5.0420	11.8644	0.0000
July 25, 1999	-2.6161	-2.7778	-5.7663	-0.8403	-4.4248	-3.0303	0.0000
August 1, 1999	-3.9770	4.2857	-1.6103	3.3898	-8.7963	-1.5625	0.0000
August 8, 1999	-4.3278	-15.0685	-4.7463	-11.4754	-8.1218	-9.5238	0.0000
August 15, 1999	-3.0340	1.6129	-21.6495	4.6296	1.6575	-5.2632	0.0000
August 22, 1999	3.9478	3.1746	1.9737	-0.8850	-0.5435	-3.7037	0.0000
August 29, 1999	3.8660	-7.6923	4.3011	1.7857	1.6393	1.9231	0.0000
September 5, 1999	-5.7744	20.0000	-10.1031	-3.5088	-1.6129	-9.4340	0.0000

September 12, 1999	-0.0487	-1.3889	17.8899	4.5455	1.6393	0.0000	0.0000
September 19, 1999	1.6825	-7.1429	-1.9455	2.6087	-1.6129	6.2500	0.0000
September 26, 1999	-12.8150	10.7692	-13.4921	-6.7797	-1.6393	-9.8039	0.0000
October 3, 1999	6.6019	-23.6111	6.6514	5.4545	-1.6667	-2.1739	0.0000
October 10, 1999	-3.4894	-0.9091	-6.2366	0.0000	0.5650	0.0000	0.0000
October 17, 1999	-1.9388	-3.6697	2.2936	-1.7241	0.0000	-4.4444	0.0000
October 24, 1999	-2.1380	-11.4286	-2.2422	-1.7544	5.6180	0.0000	0.0000
October 31, 1999	4.8759	-3.2258	4.5872	5.3571	-3.1915	4.6512	0.0000
November 7, 1999	5.7945	8.8889	6.3596	1.6949	-0.5495	-2.2222	0.0000
November 14, 1999	3.2380	4.0816	-10.1031	1.6667	1.1050	2.2727	0.0000
November 21, 1999	-4.7382	-24.5098	-8.7156	-2.4590	-2.7322	-2.2222	0.0000
November 28, 1999	0.1847	6.4935	-2.5126	4.2017	0.5618	4.5455	0.0000
December 5, 1999	0.5118	-6.7073	0.0000	-0.8065	1.1173	0.0000	0.0000
December 12, 1999	1.2910	-3.2680	0.0000	-3.2520	-0.5525	-6.5217	0.0000
December 19, 1999	4.6573	7.4324	0.0000	3.3613	3.3333	4.6512	0.0000
December 26, 1999	5.0009	-3.1447	12.3711	0.0000	3.2258	2.2222	0.0000
January 2, 2000	4.4722	-6.4935	-6.6514	0.8130	3.1250	4.3478	0.0000
January 9, 2000	-5.9367	-5.5556	-2.2113	-1.6129	-4.5455	-14.5833	0.0000
January 16, 2000	4.6458	-1.4706	-2.5126	4.9180	2.1164	51.2195	0.0000
January 23, 2000	0.9592	2.2388	7.4742	1.5625	2.5907	0.0000	0.0000
January 30, 2000	-0.3069	-5.1095	9.3525	3.0769	1.0101	-1.6129	0.0000
February 6, 2000	-1.4892	-6.1538	-8.5526	-11.9403	1.0000	3.2787	0.0000
February 13, 2000	-3.0233	18.0328	2.3981	42.3729	3.9604	41.2698	0.0000
February 20, 2000	-10.4731	-15.2778	-11.4754	-15.4762	-10.9524	-22.4719	0.0000
February 27, 2000	-0.4139	3.2787	-7.6720	14.7887	13.3690	13.0435	0.0000
March 5, 2000	-5.7862	-7.9365	-22.0630	-6.5359	-5.5276	3.8462	0.0000
March 12, 2000	5.0296	5.1724	3.3088	14.6853	1.0638	27.1605	0.0000
March 19, 2000	-0.6610	-4.9180	0.0000	-1.2195	-0.5263	28.1553	0.0000
March 26, 2000	1.1057	14.6552	3.5587	39.5062	55.5556	1.5152	0.0000
April 2, 2000	-0.9501	-12.7820	0.0000	-15.4867	-10.2041	-18.6567	0.0000
April 9, 2000	0.7819	8.6207	-3.4364	4.1885	-6.0606	-3.6697	0.0000

April 16, 2000	2.7265	-3.1746	3.5587	9.5477	16.1290	3.8095	0.0000
April 23, 2000	-4.6785	-4.0984	6.5292	-9.6330	-12.5000	-11.9266	0.0000
April 30, 2000	-1.1796	3.4188	-6.1290	6.5990	4.7619	8.3333	0.0000
May 7, 2000	-2.6716	-3.3058	-3.4364	-6.6667	-1.5152	-9.6154	0.0000
May 14, 2000	-9.0270	-10.2564	-13.8790	-7.1429	-7.6923	-10.6383	0.0000
May 21, 2000	-0.6567	2.8571	0.0000	-10.4396	0.8333	-1.1905	0.0000
May 28, 2000	-8.8294	-10.1852	-23.9669	-9.8160	-0.8264	-10.8434	0.0000
June 4, 2000	8.3685	5.1546	5.4348	5.4422	3.3333	9.4595	0.0000
June 11, 2000	0.6101	-1.9608	0.0000	1.2903	0.0000	14.8148	0.0000
June 18, 2000	0.9199	2.0000	-25.2577	-1.9108	3.2258	2.1505	0.0000
June 25, 2000	-3.2454	-14.7059	-6.2069	-5.8442	5.4688	-7.3684	0.0000
July 2, 2000	-2.2862	-4.5977	0.0000	-2.7586	-2.2222	-2.2727	0.0000
July 9, 2000	-0.8659	1.2048	0.0000	-1.4184	2.2727	5.8140	0.0000
July 16, 2000	-2.2579	5.9524	0.0000	-3.5971	-5.1852	-17.5824	0.0000
July 23, 2000	-3.1434	-3.3708	0.0000	-1.4925	0.0000	-16.0000	-0.8197
July 30, 2000	-4.5999	-3.4884	0.0000	-1.5152	-4.6875	-3.1746	0.0000
August 6, 2000	6.7970	1.2048	13.9706	6.9231	0.8197	0.0000	4.1322
August 13, 2000	1.6633	2.3810	-6.4516	-0.7194	2.4390	-3.2787	3.1746
August 20, 2000	0.8275	6.9767	-13.1034	-1.4493	3.1746	0.0000	2.3077
August 27, 2000	-3.8782	-4.3478	0.0000	0.0000	2.3077	1.6949	-7.5188
September 3, 2000	1.2678	0.0000	0.0000	2.9412	-0.7519	8.3333	0.8130
September 10, 2000	-4.3961	2.2727	0.0000	4.2857	-3.7879	3.0769	10.4839
September 17, 2000	-1.2691	-2.3256	-7.9365	-2.7397	-5.5118	-8.9552	0.7874
September 24, 2000	-6.5326	0.0000	0.0000	-3.5211	-1.6667	-3.2787	1.5625
October 1, 2000	1.1490	0.0000	0.0000	1.4599	3.3898	1.6949	2.3077
October 8, 2000	-3.4657	-2.3810	-7.7586	-3.5971	-0.8197	-6.6667	3.7594
October 15, 2000	-5.0134	0.0000	-9.3458	-2.2388	-0.8264	-10.7143	-0.7246
October 22, 2000	8.7863	4.8780	0.0000	0.7634	5.0000	2.0000	8.0292
October 29, 2000	-0.8171	-1.1628	-10.3093	0.0000	0.0000	0.0000	-10.1351
November 5, 2000	4.9209	1.1765	11.4943	9.8485	5.5556	9.8039	0.7519
November 12, 2000	1.8726	0.0000	29.8969	5.5172	0.7519	0.0000	0.0000

November 19, 2000	0.5047	1.1628	0.0000	0.0000	2.9851	-1.7857	10.4478
November 26, 2000	-3.1522	-1.1494	-7.9365	2.6144	0.7246	-3.6364	1.4925
December 3, 2000	-4.0502	-1.1628	0.0000	-2.5478	-1.4388	-1.8868	-1.4706
December 10, 2000	-0.0621	1.1765	-16.3793	-1.3072	1.4599	-3.8462	0.0000
December 17, 2000	-0.1900	-1.1628	10.3093	0.0000	0.7194	0.0000	0.0000
December 24, 2000	-2.2257	-1.1765	-9.3458	-1.9868	-2.8571	-6.0000	-5.2239
December 31, 2000	0.7863	1.1905	0.0000	0.6757	5.1471	0.0000	2.3622
January 7, 2001	6.5270	1.1765	10.3093	0.6711	0.6993	6.3830	0.0000
January 14, 2001	8.5402	0.0000	0.0000	0.0000	0.6944	2.0000	-0.7692
January 21, 2001	1.8024	1.1628	8.4112	4.6667	2.0690	0.0000	-2.3256
January 28, 2001	4.8192	21.8391	25.0000	-1.2739	0.0000	3.9216	0.0000
February 4, 2001	0.5931	-3.7736	40.6897	-9.6774	1.3514	-1.8868	-0.7937
February 11, 2001	-2.8075	-1.9608	-14.2157	-1.4286	-14.6667	-5.7692	-0.8000
February 18, 2001	-2.6854	2.0000	-11.4286	0.0000	0.7813	0.0000	0.8065
February 25, 2001	2.6076	-5.8824	12.9032	-0.7246	-5.4264	0.0000	-3.2000
March 4, 2001	-5.6100	1.0417	-28.0000	0.0000	7.7869	-2.0408	0.0000
March 11, 2001	0.3104	-1.0309	-7.9365	-4.8000	0.8547	-2.0833	1.6529
March 18, 2001	-4.5603	-8.3333	0.0000	-14.2857	-11.8644	-12.7660	-0.8130
March 25, 2001	-0.9386	0.0000	0.0000	-3.4314	-1.9231	9.7561	-0.8197
April 1, 2001	0.5823	6.8182	-5.1724	17.7665	0.0000	-6.6667	1.6529
April 8, 2001	-3.3980	-4.2553	0.0000	17.2414	1.9608	-4.7619	0.8130
April 15, 2001	3.2835	6.6667	9.0909	-2.2059	5.7692	2.5000	-1.6129
April 22, 2001	0.4463	-1.0417	-16.6667	-0.7519	-0.9091	0.0000	-1.6393
April 29, 2001	1.5825	1.0526	0.0000	-3.0303	-0.9174	14.6341	3.3333
May 6, 2001	3.1190	0.0000	10.0000	1.5625	1.8519	0.0000	4.8387
May 13, 2001	1.4520	7.9167	0.0000	1.5385	1.8182	0.0000	3.0769
May 20, 2001	-3.3094	8.3333	9.0909	17.4242	2.6786	-4.2553	2.2388
May 27, 2001	3.4826	42.3077	0.0000	20.0000	4.3478	0.0000	8.0292
June 3, 2001	0.3054	-4.7297	0.0000	-5.9140	-3.3333	0.0000	5.4054
June 10, 2001	0.0737	-4.2553	0.0000	-0.5714	2.5862	4.4444	-1.9231
June 17, 2001	3.7401	2.9630	16.6667	14.9425	-0.8403	2.1277	29.4118

June 24, 2001	-1.6360	-0.7194	0.0000	-16.5000	1.6949	0.0000	5.2910
July 1, 2001	1.2176	14.4928	0.0000	3.5928	1.6667	8.3333	-0.5025
July 8, 2001	0.7224	3.7975	0.0000	-3.4682	0.8197	0.0000	-8.0808
July 15, 2001	-3.2535	7.3171	-7.1429	-5.3892	-1.6260	-5.7692	-1.0989
July 22, 2001	-0.6490	-2.8409	0.0000	-0.6329	0.8264	0.0000	9.4444
July 29, 2001	-3.5802	-5.2632	15.3846	-3.1847	0.8197	-2.0408	-1.0989
August 5, 2001	4.9354	3.0864	0.0000	13.8158	1.6260	0.0000	3.8889
August 12, 2001	-0.0253	4.7904	0.0000	-5.7803	0.0000	-2.0833	-1.0695
August 19, 2001	2.3364	-9.1429	-6.6667	4.9080	-4.0000	4.2553	1.0811
August 26, 2001	2.7595	-1.2579	0.0000	-0.5848	-0.8333	4.0816	10.1604
September 2, 2001	1.0236	-6.3694	0.0000	-3.5294	3.7815	-3.9216	0.9709
September 9, 2001	2.0115	2.0408	-7.1429	3.6585	0.8403	2.0408	-0.9615
September 16, 2001	-15.8390	-6.8000	-30.7692	-15.2941	-10.8333	-20.0000	-10.1942
September 23, 2001	-4.6859	-7.4074	0.0000	-4.1667	-1.8692	-4.0000	-1.6216
September 30, 2001	0.8886	2.4000	0.0000	5.7971	0.0000	4.1667	6.0440
October 7, 2001	1.3861	2.3438	0.0000	0.0000	5.7143	2.5000	-6.7358
October 14, 2001	1.4561	0.7634	0.0000	1.3699	1.8018	4.8780	-1.1111
October 21, 2001	-0.0877	0.7576	0.0000	3.3784	2.6549	-2.3256	3.9326
October 28, 2001	-1.4470	-3.0075	0.0000	5.2288	2.5862	2.3810	3.7838
November 4, 2001	-2.2737	-1.5504	-11.1111	-2.4845	-5.0420	-7.9070	0.0000
November 11, 2001	-2.2281	5.5118	-8.7500	4.4586	2.6549	1.0101	-2.2222
November 18, 2001	2.7713	2.2388	1.3699	1.8293	-8.6207	14.0000	1.7045
November 25, 2001	7.7049	-0.7299	5.4054	1.1976	3.7736	-3.5088	-1.1173
December 2, 2001	1.9712	0.0000	11.5385	2.3669	-0.9091	5.4545	-2.8249
December 9, 2001	0.4725	11.0294	1.1494	-0.5780	0.0000	0.8621	3.4884
December 16, 2001	-3.3054	4.6358	-5.6818	0.5814	-0.9174	4.2735	2.2472
December 23, 2001	0.9150	1.8987	1.2048	1.7341	1.8519	4.9180	9.8901
December 30, 2001	2.4133	3.1056	4.7619	2.8409	0.0000	3.9063	2.0000
January 6, 2002	3.9098	3.0120	10.2273	2.2099	5.4545	0.0000	3.9216
January 13, 2002	2.1601	6.4327	7.2165	3.7838	0.8621	3.7594	4.7170
January 20, 2002	-1.5594	-0.5495	-11.5385	-1.5625	1.7094	-1.4493	-0.9009

January 27, 2002	6.7618	3.8674	3.2609	2.1164	2.5210	2.2059	0.9091
February 3, 2002	-0.6903	2.1277	8.4211	-10.3627	-2.4590	-3.5971	2.7027
February 10, 2002	5.0319	0.0000	6.7961	0.0000	1.6807	1.4925	3.5088
February 17, 2002	5.4951	-4.1667	12.7273	5.2023	-2.4793	7.3529	2.5424
February 24, 2002	-5.8174	-4.3478	-16.9355	3.2967	-1.6949	1.3699	0.8264
March 3, 2002	8.3485	2.2727	11.6505	3.5088	1.7241	6.0811	-1.6393
March 10, 2002	2.6271	1.1111	-0.8696	0.5650	0.8475	7.0064	-1.6667
March 17, 2002	-3.3943	-2.1978	2.6316	5.0562	0.0000	-4.1667	5.0847
March 24, 2002	3.1585	1.1236	-0.8547	0.0000	0.8403	4.3478	20.1613
March 31, 2002	-3.9454	2.2222	-0.8621	0.5348	-1.6667	0.5952	-4.6980
April 7, 2002	-1.0590	-7.0652	6.0870	0.5319	-1.6949	0.0000	7.7465
April 14, 2002	2.6055	-1.1696	0.8197	-1.0582	-0.8621	0.0000	0.6536
April 21, 2002	1.8123	5.3254	9.7561	0.5348	0.0000	1.7751	8.1169
April 28, 2002	-2.6054	-0.5618	0.0000	15.9574	0.8696	3.4884	0.6173
May 5, 2002	-0.6349	9.0395	-10.3704	-8.2569	0.8621	-2.2472	0.6135
May 12, 2002	2.1494	19.1710	0.0000	4.0000	2.5641	0.0000	2.4390
May 19, 2002	-1.0102	-12.1739	-0.8264	12.5000	-0.8333	-1.1494	8.3333
May 26, 2002	3.6644	10.5941	-6.6667	-2.5641	0.8403	-0.5814	-1.0989
June 2, 2002	4.0475	-3.7383	0.0000	2.6316	-3.3333	5.2632	-0.5556
June 9, 2002	2.2968	27.1845	3.5714	-1.7094	0.0000	-6.1111	-6.7039
June 16, 2002	1.2245	-8.3969	-1.7241	1.7391	0.0000	-1.7751	-0.5988
June 23, 2002	-6.3867	-0.8333	-4.3860	-3.4188	-3.4483	-2.4096	-3.6145
June 30, 2002	-1.6082	-8.4034	-4.5872	-4.4248	4.4643	-0.6173	0.0000
July 7, 2002	3.0840	2.7523	1.9231	2.7778	0.8547	0.6211	5.6250
July 14, 2002	-0.1097	-1.7857	0.0000	-1.8018	0.8475	0.0000	0.5917
July 21, 2002	-1.5949	-4.5455	3.7736	-2.7523	0.0000	-1.8519	-9.4118
July 28, 2002	-7.0510	-3.8095	-7.2727	-1.8868	-0.8403	-5.0314	-6.4935
August 4, 2002	1.0888	2.9703	-1.9608	1.9231	1.6949	-0.6623	9.7222
August 11, 2002	-0.9151	0.0000	-2.0000	-0.9434	0.8333	6.6667	-5.0633
August 18, 2002	1.6237	1.9231	-1.0204	5.7143	-9.9174	-3.1250	0.6667
August 25, 2002	-1.6138	0.0000	2.0619	0.9009	-3.6697	5.1613	3.3113

September 1, 2002	-1.5940	2.8302	-3.0303	-1.7857	6.7619	-3.0675	-4.4872
September 8, 2002	-2.1071	-2.7523	-2.0833	0.9091	-0.9524	0.0000	-0.6711
September 15, 2002	1.0182	1.6981	-2.1277	0.9009	0.0000	0.6329	5.4054
September 22, 2002	-1.5764	2.8571	-1.0870	-0.8929	-3.8462	-3.1447	0.6410
September 29, 2002	-3.6413	0.0000	-8.7912	-0.9009	-2.5000	0.0000	0.0000
October 6, 2002	0.6495	0.0000	0.0000	2.7273	0.5128	3.8961	7.0064
October 13, 2002	-3.0828	-1.8519	-6.0241	1.7699	-2.0408	-2.5000	1.1905
October 20, 2002	3.6470	0.0000	3.8462	1.7391	2.0833	-1.9231	0.0000
October 27, 2002	1.7520	-1.8868	3.7037	-0.8547	-1.0204	1.3072	-0.5882
November 3, 2002	2.6459	0.9615	3.5714	5.1724	3.0928	1.2903	0.5917
November 10, 2002	-0.7493	0.9524	-3.4483	1.6393	0.0000	-1.9108	0.0000
November 17, 2002	0.3493	-1.8868	-2.3810	-1.6129	2.0000	1.2987	-0.5882
November 24, 2002	1.7825	3.8462	4.8780	0.8197	6.8627	1.2821	-8.8757
December 1, 2002	0.6371	-0.9259	0.0000	10.5691	-5.5046	-2.5316	-2.5974
December 8, 2002	0.0521	0.0000	-1.1628	5.1471	0.9709	1.9481	-5.8333
December 15, 2002	-2.4350	-0.9346	-3.5294	-2.0979	-1.9231	-1.2739	1.2389
December 22, 2002	-1.8304	-2.8302	-9.7561	0.0000	-1.9608	-0.6452	-7.6923
December 29, 2002	1.9446	0.9709	-6.7568	0.7143	0.0000	0.0000	13.5417

ภาคผนวก ข

ผลการทดสอบจากโปรแกรมของตลาดหลักทรัพย์แห่งประเทศไทย

การทดสอบยูนิทรูท

1. แนวเดินเชิงสุ่ม และจุดตัดแกน

ADF Test Statistic	-15.00839	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(SETI)
Method: Least Squares
Date: 04/25/03 Time: 17:51
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SETI(-1)	-0.931157	0.062042	-15.00839	0.0000
C	0.115781	0.299051	0.387162	0.6990

R-squared	0.467083	Mean dependent var	0.031356
Adjusted R-squared	0.465010	S.D. dependent var	6.578773
S.E. of regression	4.811914	Akaike info criterion	5.987759
Sum squared resid	5950.710	Schwarz criterion	6.015225
Log likelihood	-773.4148	F-statistic	225.2518
Durbin-Watson stat	1.990204	Prob(F-statistic)	0.000000

2. แนวเดินเชิงสุ่ม จุดตัดแกน และแนวโน้ม

ADF Test Statistic	-14.98095	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(SETI)
Method: Least Squares
Date: 04/25/03 Time: 17:52
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SETI(-1)	-0.931221	0.062160	-14.98095	0.0000
C	0.211380	0.600923	0.351759	0.7253
@TREND(1/11/1998)	-0.000735	0.004007	-0.183526	0.8545

R-squared	0.467154	Mean dependent var	0.031356
Adjusted R-squared	0.462991	S.D. dependent var	6.578773
S.E. of regression	4.820986	Akaike info criterion	5.995349
Sum squared resid	5949.927	Schwarz criterion	6.036548
Log likelihood	-773.3977	F-statistic	112.2193
Durbin-Watson stat	1.990311	Prob(F-statistic)	0.000000

3. แนวเดินเชิงสุ่ม

ADF Test Statistic	-15.02854	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(SETI)
Method: Least Squares
Date: 04/25/03 Time: 17:52
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SETI(-1)	-0.930705	0.061929	-15.02854	0.0000

R-squared	0.466773	Mean dependent var	0.031356
Adjusted R-squared	0.466773	S.D. dependent var	6.578773
S.E. of regression	4.803979	Akaike info criterion	5.980620
Sum squared resid	5954.180	Schwarz criterion	5.994353
Log likelihood	-773.4903	Durbin-Watson stat	1.990121

ภาคผนวก ค

ผลการทดสอบจากโปรแกรมของหลักทรัพย์
บริษัทเคพโทรนิคอินเตอร์เนชั่นแนล
ประเทศไทยจำกัด(มหาชน)

การทดสอบยูนิทรูท

1. แนวเดินเชิงสุ่ม และจุดตัดแกน

ADF Test Statistic	-15.10856	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(CAPE)
Method: Least Squares
Date: 04/25/03 Time: 17:34
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAPE(-1)	-0.932021	0.061688	-15.10856	0.0000
C	-0.510624	0.567807	-0.899291	0.3693

R-squared	0.470396	Mean dependent var	-0.103308
Adjusted R-squared	0.468336	S.D. dependent var	12.51820
S.E. of regression	9.127686	Akaike info criterion	7.268194
Sum squared resid	21411.87	Schwarz criterion	7.295659
Log likelihood	-939.2311	F-statistic	228.2686
Durbin-Watson stat	2.000569	Prob(F-statistic)	0.000000

2. แนวเดินเชิงสุ่ม จุดตัดแกน และแนวโน้ม

ADF Test Statistic	-15.07830	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(CAPE)
Method: Least Squares
Date: 04/25/03 Time: 17:34
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAPE(-1)	-0.932001	0.061811	-15.07830	0.0000
C	-0.549248	1.139995	-0.481799	0.6304
@TREND(1/11/1998)	0.000297	0.007601	0.039097	0.9688

R-squared	0.470400	Mean dependent var	-0.103308
Adjusted R-squared	0.466262	S.D. dependent var	12.51820
S.E. of regression	9.145469	Akaike info criterion	7.275910
Sum squared resid	21411.74	Schwarz criterion	7.317108
Log likelihood	-939.2303	F-statistic	113.6916
Durbin-Watson stat	2.000624	Prob(F-statistic)	0.000000

3. แนวเดินเชิงสุ่ม

ADF Test Statistic	-15.08847	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(CAPE)
Method: Least Squares
Date: 04/25/03 Time: 17:35
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAPE(-1)	-0.929387	0.061596	-15.08847	0.0000
R-squared	0.468730	Mean dependent var	-0.103308	
Adjusted R-squared	0.468730	S.D. dependent var	12.51820	
S.E. of regression	9.124302	Akaike info criterion	7.263613	
Sum squared resid	21479.24	Schwarz criterion	7.277346	
Log likelihood	-939.6379	Durbin-Watson stat	1.999779	

การทดสอบการร่วมกันไปด้วยกัน

Dependent Variable: CAPE
Method: Least Squares
Date: 04/25/03 Time: 17:36
Sample: 1/11/1998 12/29/2002
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.548330	0.506037	-1.083577	0.2796
SETI	0.889585	0.105154	8.459821	0.0000
R-squared	0.217158	Mean dependent var	-0.461331	
Adjusted R-squared	0.214124	S.D. dependent var	9.202426	
S.E. of regression	8.157917	Akaike info criterion	7.043517	
Sum squared resid	17170.32	Schwarz criterion	7.070907	
Log likelihood	-913.6573	F-statistic	71.56857	
Durbin-Watson stat	2.074569	Prob(F-statistic)	0.000000	

Estimation Command:
=====================
LS CAPE C SETI

Estimation Equation:
=====================
CAPE = C(1) + C(2)*SETI

Substituted Coefficients:
=====================
CAPE = -0.5483298777 + 0.889585491*SETI

การทดสอบยูนิทรูทโดยใช้ส่วนที่เหลือ

1. แนวเดินเชิงสุ่ม

ADF Test Statistic	-17.35731	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(E)
Method: Least Squares
Date: 04/25/03 Time: 17:39
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
E(-1)	-1.059087	0.061017	-17.35731	0.0000
R-squared	0.538632	Mean dependent var		-0.131202
Adjusted R-squared	0.538632	S.D. dependent var		11.74941
S.E. of regression	7.980682	Akaike info criterion		6.995778
Sum squared resid	16432.35	Schwarz criterion		7.009511
Log likelihood	-904.9533	Durbin-Watson stat		1.964887

แบบจำลองเอเรอร์คอร์เรคชัน

Dependent Variable: D(CAPE)
Method: Least Squares
Date: 04/25/03 Time: 17:41
Sample(adjusted): 1/25/1998 12/29/2002
Included observations: 258 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.088188	0.572407	-0.154065	0.8777
D(SETI(-1))	-0.383447	0.104489	-3.669736	0.0003
D(CAPE(-1))	0.021315	0.070706	0.301460	0.7633
E(-1)	-1.069357	0.103906	-10.29159	0.0000
R-squared	0.463131	Mean dependent var		-0.022066
Adjusted R-squared	0.456790	S.D. dependent var		12.47393
S.E. of regression	9.193638	Akaike info criterion		7.290283
Sum squared resid	21468.84	Schwarz criterion		7.345368
Log likelihood	-936.4465	F-statistic		73.03772
Durbin-Watson stat	2.081076	Prob(F-statistic)		0.000000

แบบจำลองสมการถดถอยแบบสลับเปลี่ยน

1. ภาวะขาขึ้น

Dependent Variable: CAPE
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 17:42
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBIT
Convergence achieved after 7 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	7.477858	1.221361	6.122559	0.0000
SETI	1.876515	0.240800	7.792833	0.0000
		Error Distribution		
SCALE:C(3)	13.99166	1.029208	13.59459	0.0000
Mean dependent var	-0.461331	S.D. dependent var		9.202426
Akaike info criterion	4.140564	Schwarz criterion		4.181648
Log likelihood	-535.2733	Hannan-Quinn criter.		4.157080
Avg. log likelihood	-2.058743			
Left censored obs	0	Right censored obs		148
Uncensored obs	112	Total obs		260

2. ภาวะขาลง

Dependent Variable: CAPE
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 17:44
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBITTY
Convergence achieved after 8 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	5.223427	0.511935	10.20330	0.0000
SETI	0.225862	0.106293	2.124890	0.0336
		Error Distribution		
SCALE:C(3)	6.240762	0.337943	18.46691	0.0000
Mean dependent var	-0.461331	S.D. dependent var		9.202426
Akaike info criterion	3.840752	Schwarz criterion		3.881836
Log likelihood	-496.2977	Hannan-Quinn criter.		3.857268
Avg. log likelihood	-1.908837			
Left censored obs	0	Right censored obs		112
Uncensored obs	148	Total obs		260

3. ทั้งภาวะขาขึ้น และขาลง

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+----------------------------------------------------------------------+
| Switching Regressions                                                |
| Ordinary    least squares regression    Weighting variable = none    |
| Dep. var. = CAPE     Mean=   5.076170124    , S.D.=   6.726274851    |
| Model size: Observations =      148, Parameters =   2, Deg.Fr.=   146 |
| Residuals:  Sum of squares= 6357.093398    , Std.Dev.=       6.59862 |
| Fit:        R-squared=  .044145, Adjusted R-squared =          .03760 |
| Model test: F[  1,     146] =     6.74,    Prob value =        .01038 |
| Diagnostic: Log-L =    -488.2514, Restricted(b=0) Log-L =   -491.5924 |
|             LogAmemiyaPrCrt.=    3.787, Akaike Info. Crt.=      6.625 |
| OLS estimates of equation 1                                          |
+----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant  4.534903851      .58107654         7.804   .0000
 SETI      .3136124613      .12077370         2.597   .0094  1.7259081
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+----------------------------------------------------------------------+
| Switching Regressions                                                |
| Ordinary    least squares regression    Weighting variable = none    |
| Dep. var. = CAPE     Mean=  -7.778741462    , S.D.=   6.539818438    |
| Model size: Observations =      112, Parameters =   2, Deg.Fr.=   110 |
| Residuals:  Sum of squares= 3972.638512    , Std.Dev.=       6.00957 |
| Fit:        R-squared=  .163194, Adjusted R-squared =          .15559 |
| Model test: F[  1,     110] =    21.45,    Prob value =        .00001 |
| Diagnostic: Log-L =    -358.7676, Restricted(b=0) Log-L =   -368.7447 |
|             LogAmemiyaPrCrt.=    3.604, Akaike Info. Crt.=      6.442 |
| OLS estimates of equation 0                                          |
+----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant -6.805664002      .59550410       -11.428   .0000
 SETI      .4738311042      .87338643E-01     5.425   .0000 -2.0536378

Normal exit from iterations. Exit status=0.
```

```
              +---------------------------------------------+
              | Switching Regressions                       |
              | Maximum Likelihood Estimates                |
              | Dependent variable                  CAPE    |
              | Weighting variable                   ONE    |
              | Number of observations               260    |
              | Iterations completed                  14    |
              | Log likelihood function        -1031.571    |
              | Sample separation variable is TOBIT         |
              | CAPE      is the minimum  of y*(1) and y*(0) |
              +---------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
          RHS for Regime 1
 Constant  7.477862127      1.1462634         6.524   .0000
 SETI      1.876512901      .27176006         6.905   .0000  1.7259081
          RHS for Regime 2
 Constant  5.223427523      .74954619         6.969   .0000
 SETI      .2258606825      .13086866         1.726   .0844 -2.0536378
 Sigma(1)  13.99165815      1.3825467        10.120   .0000
 Sigma(0)  6.240762601      .27723664        22.511   .0000
```

ภาคผนวก ง

ผลการทดสอบจากโปรแกรมของหลักทรัพย์
บริษัทคอมพาสส์อีสต์อินดัสตรี้
ประเทศไทยจำกัด(มหาชน)

การทดสอบยูนิทรูท

1. แนวเดินเชิงสุ่ม และจุดตัดแกน

ADF Test Statistic	-13.02649	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(CEI)
Method: Least Squares
Date: 04/25/03 Time: 18:50
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CEI(-1)	-0.808064	0.062032	-13.02649	0.0000
C	0.682123	0.308949	2.207879	0.0281

R-squared	0.397688	Mean dependent var	0.052285
Adjusted R-squared	0.395345	S.D. dependent var	6.315366
S.E. of regression	4.910803	Akaike info criterion	6.028444
Sum squared resid	6197.808	Schwarz criterion	6.055910
Log likelihood	-778.6835	F-statistic	169.6893
Durbin-Watson stat	1.993482	Prob(F-statistic)	0.000000

2. แนวเดินเชิงสุ่ม จุดตัดแกน และแนวโน้ม

ADF Test Statistic	-12.99852	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(CEI)
Method: Least Squares
Date: 04/25/03 Time: 18:50
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CEI(-1)	-0.808091	0.062168	-12.99852	0.0000
C	0.692817	0.616173	1.124387	0.2619
@TREND(1/11/1998)	-8.21E-05	0.004090	-0.020073	0.9840

R-squared	0.397689	Mean dependent var	0.052285
Adjusted R-squared	0.392984	S.D. dependent var	6.315366
S.E. of regression	4.920381	Akaike info criterion	6.036164
Sum squared resid	6197.799	Schwarz criterion	6.077363
Log likelihood	-778.6833	F-statistic	84.51486
Durbin-Watson stat	1.993431	Prob(F-statistic)	0.000000

3. แนวเดินเชิงสุ่ม

ADF Test Statistic	-12.74382	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(CEI)
Method: Least Squares
Date: 04/25/03 Time: 18:50
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CEI(-1)	-0.786629	0.061726	-12.74382	0.0000
R-squared	0.386264	Mean dependent var		0.052285
Adjusted R-squared	0.386264	S.D. dependent var		6.315366
S.E. of regression	4.947542	Akaike info criterion		6.039512
Sum squared resid	6315.367	Schwarz criterion		6.053245
Log likelihood	-781.1168	Durbin-Watson stat		2.000006

การทดสอบการร่วมกันไปด้วยกัน

Dependent Variable: CEI
Method: Least Squares
Date: 04/25/03 Time: 18:51
Sample: 1/11/1998 12/29/2002
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.812659	0.305815	2.657353	0.0084
SETI	0.162250	0.063548	2.553187	0.0113
R-squared	0.024644	Mean dependent var		0.828527
Adjusted R-squared	0.020863	S.D. dependent var		4.982353
S.E. of regression	4.930105	Akaike info criterion		6.036260
Sum squared resid	6270.931	Schwarz criterion		6.063650
Log likelihood	-782.7138	F-statistic		6.518763
Durbin-Watson stat	1.608925	Prob(F-statistic)		0.011250

Estimation Command:
=====================
LS CEI C SETI

Estimation Equation:
=====================
CEI = C(1) + C(2)*SETI

Substituted Coefficients:
=====================
CEI = 0.8126593256 + 0.1622504773*SETI

การทดสอบยูนิทรูทโดยใช้ส่วนที่เหลือ

1. แนวเดินเชิงสุ่ม

ADF Test Statistic	-15.92274	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(RESID01)
Method: Least Squares
Date: 04/25/03 Time: 18:56
Sample(adjusted): 1/25/1998 12/29/2002
Included observations: 258 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01(-1)	-1.009146	0.063378	-15.92274	0.0000

R-squared	0.496562	Mean dependent var	0.063121
Adjusted R-squared	0.496562	S.D. dependent var	6.837428
S.E. of regression	4.851384	Akaike info criterion	6.000274
Sum squared resid	6048.734	Schwarz criterion	6.014045
Log likelihood	-773.0353	Durbin-Watson stat	1.968352

แบบจำลองเอเรอร์คอร์เรคชัน

Dependent Variable: D(CEI)
Method: Least Squares
Date: 04/25/03 Time: 18:57
Sample(adjusted): 1/25/1998 12/29/2002
Included observations: 258 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.006012	0.304499	0.019742	0.9843
D(SETI(-1))	-0.110715	0.048244	-2.294882	0.0226
D(CEI(-1))	0.120900	0.077506	1.559875	0.1200
RESID01(-1)	-0.959463	0.099649	-9.628383	0.0000

R-squared	0.409612	Mean dependent var	0.052487
Adjusted R-squared	0.402639	S.D. dependent var	6.327640
S.E. of regression	4.890578	Akaike info criterion	6.027881
Sum squared resid	6075.110	Schwarz criterion	6.082965
Log likelihood	-773.5966	F-statistic	58.74188
Durbin-Watson stat	1.997300	Prob(F-statistic)	0.000000

แบบจำลองสมการถดถอยแบบสลับเปลี่ยน

1. ภาวะขาขึ้น

Dependent Variable: CEI
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:58
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBIT
Convergence achieved after 8 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	11.12936	1.402966	7.932736	0.0000
SETI	0.618778	0.213275	2.901308	0.0037
		Error Distribution		
SCALE:C(3)	11.05258	1.096554	10.07938	0.0000
Mean dependent var	0.828527	S.D. dependent var		4.982353
Akaike info criterion	2.396802	Schwarz criterion		2.437887
Log likelihood	-308.5843	Hannan-Quinn criter.		2.413319
Avg. log likelihood	-1.186863			
Left censored obs	0	Right censored obs		199
Uncensored obs	61	Total obs		260

2. ภาวะขาลง

Dependent Variable: CEI
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:58
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBITTY
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	2.428162	0.316213	7.678879	0.0000
SETI	0.060051	0.064204	0.935324	0.3496
		Error Distribution		
SCALE:C(3)	4.635045	0.224440	20.65160	0.0000
Mean dependent var	0.828527	S.D. dependent var		4.982353
Akaike info criterion	4.676408	Schwarz criterion		4.717493
Log likelihood	-604.9331	Hannan-Quinn criter.		4.692925
Avg. log likelihood	-2.326666			
Left censored obs	0	Right censored obs		61
Uncensored obs	199	Total obs		260

3. ทั้งภาวะขาขึ้น และขาลง

```
+----------------------------------------------------------------------------+
| Switching Regressions                                                      |
| Ordinary    least squares regression    Weighting variable = none          |
| Dep. var. = CEI      Mean=   2.078186422     , S.D.=   4.809114581         |
| Model size: Observations =      199, Parameters =   2, Deg.Fr.=     197    |
| Residuals:  Sum of squares= 4575.328861      , Std.Dev.=         4.81923   |
| Fit:        R-squared=  .000859, Adjusted R-squared =            -.00421   |
| Model test: F[  1,     197] =      .17,    Prob value =           .68116   |
| Diagnostic: Log-L =   -594.3141, Restricted(b=0) Log-L =     -594.3996    |
|             LogAmemiyaPrCrt.=    3.155, Akaike Info. Crt.=       5.993     |
| OLS estimates of equation 1                                                |
+----------------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant  2.012370030      .34282385        5.870   .0000
 SETI      .1446503737      .62917881E-01    2.299   .0215   .45500326


+----------------------------------------------------------------------------+
| Switching Regressions                                                      |
| Ordinary    least squares regression    Weighting variable = none          |
| Dep. var. = CEI      Mean=  -3.248236313     , S.D.=   2.959510822         |
| Model size: Observations =       61, Parameters =   2, Deg.Fr.=      59    |
| Residuals:  Sum of squares= 484.7179139      , Std.Dev.=         2.86628   |
| Fit:        R-squared=  .077645, Adjusted R-squared =             .06201   |
| Model test: F[  1,      59] =     4.97,    Prob value =           .02966   |
| Diagnostic: Log-L =   -149.7724, Restricted(b=0) Log-L =     -152.2376    |
|             LogAmemiyaPrCrt.=    2.138, Akaike Info. Crt.=       4.976     |
| OLS estimates of equation 0                                                |
+----------------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant -3.119148991      .36933992       -8.445   .0000
 SETI      .1209226828      .38970446E-01    3.103   .0019 -1.0675195

Normal exit from iterations. Exit status=0.

              +----------------------------------------------+
              | Switching Regressions                        |
              | Maximum Likelihood Estimates                 |
              | Dependent variable                 CEI       |
              | Weighting variable                 ONE       |
              | Number of observations             260       |
              | Iterations completed                15       |
              | Log likelihood function       -913.5173      |
              | Sample separation variable is TOBIT          |
              | CEI         is the minimum  of y*(1) and y*(0) |
              +----------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
          RHS for Regime 1
 Constant  11.12936022      1.8509576        6.013   .0000
 SETI      .6187773237      .26520890        2.333   .0196  .45500326
          RHS for Regime 2
 Constant  2.428160685      .55455657        4.379   .0000
 SETI      .6005072551E-01  .73611817E-01     .816   .4146 -1.0675195
 Sigma(1)  11.05258268      2.5160340        4.393   .0000
 Sigma(0)  4.635043220      .19912258       23.277   .0000
```

ภาคผนวก จ

ผลการทดสอบจากโปรแกรมคอมพิวเตอร์ของหลักทรัพย์
บริษัทจรูงไทยไวร์แอนด์เคเบิ้ล
จำกัด(มหาชน)

การทดสอบยูนิทรูท

1. แนวเดินเชิงสุ่ม และจุดตัดแกน

ADF Test Statistic	-17.12232	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(CTW)
Method: Least Squares
Date: 04/25/03 Time: 18:38
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CTW(-1)	-1.051896	0.061434	-17.12232	0.0000
C	0.357256	0.521249	0.685385	0.4937

R-squared	0.532875	Mean dependent var	0.085991
Adjusted R-squared	0.531057	S.D. dependent var	12.24432
S.E. of regression	8.384835	Akaike info criterion	7.098418
Sum squared resid	18068.50	Schwarz criterion	7.125884
Log likelihood	-917.2452	F-statistic	293.1739
Durbin-Watson stat	1.998891	Prob(F-statistic)	0.000000

2. แนวเดินเชิงสุ่ม จุดตัดแกน และแนวโน้ม

ADF Test Statistic	-17.08853	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(CTW)
Method: Least Squares
Date: 04/25/03 Time: 18:38
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CTW(-1)	-1.052207	0.061574	-17.08853	0.0000
C	0.192488	1.047055	0.183837	0.8543
@TREND(1/11/1998)	0.001268	0.006984	0.181559	0.8561

R-squared	0.532935	Mean dependent var	0.085991
Adjusted R-squared	0.529286	S.D. dependent var	12.24432
S.E. of regression	8.400655	Akaike info criterion	7.106012
Sum squared resid	18066.18	Schwarz criterion	7.147211
Log likelihood	-917.2285	F-statistic	146.0519
Durbin-Watson stat	1.998498	Prob(F-statistic)	0.000000

3. แนวเดินเชิงสุ่ม

ADF Test Statistic	-17.12701	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(CTW)
Method: Least Squares
Date: 04/25/03 Time: 18:39
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CTW(-1)	-1.050616	0.061343	-17.12701	0.0000

R-squared	0.532021	Mean dependent var	0.085991
Adjusted R-squared	0.532021	S.D. dependent var	12.24432
S.E. of regression	8.376214	Akaike info criterion	7.092523
Sum squared resid	18101.53	Schwarz criterion	7.106256
Log likelihood	-917.4817	Durbin-Watson stat	1.997924

การทดสอบการร่วมกันไปด้วยกัน

Dependent Variable: CTW
Method: Least Squares
Date: 04/25/03 Time: 18:40
Sample: 1/11/1998 12/29/2002
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.210309	0.507397	0.414486	0.6789
SETI	0.476307	0.105437	4.517466	0.0000

R-squared	0.073301	Mean dependent var	0.256890
Adjusted R-squared	0.069709	S.D. dependent var	8.480768
S.E. of regression	8.179836	Akaike info criterion	7.048884
Sum squared resid	17262.71	Schwarz criterion	7.076274
Log likelihood	-914.3549	F-statistic	20.40749
Durbin-Watson stat	2.033282	Prob(F-statistic)	0.000010

Estimation Command:
=====================
LS CTW C SETI

Estimation Equation:
=====================
CTW = C(1) + C(2)*SETI

Substituted Coefficients:
=====================
CTW = 0.2103086721 + 0.4763066817*SETI

การทดสอบยูนิทรูทโดยใช้ส่วนที่เหลือ

1. แนวเดินเชิงสุ่ม

ADF Test Statistic	-16.72023	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(RESID01)
Method: Least Squares
Date: 04/25/03 Time: 18:44
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01(-1)	-1.028880	0.061535	-16.72023	0.0000

R-squared	0.520041	Mean dependent var	0.071583
Adjusted R-squared	0.520041	S.D. dependent var	11.67034
S.E. of regression	8.085103	Akaike info criterion	7.021777
Sum squared resid	16865.17	Schwarz criterion	7.035510
Log likelihood	-908.3201	Durbin-Watson stat	2.005807

แบบจำลองเอเรอร์คอร์เรคชัน

Dependent Variable: D(CTW)
Method: Least Squares
Date: 04/25/03 Time: 18:45
Sample(adjusted): 1/25/1998 12/29/2002
Included observations: 258 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.112776	0.532663	0.211722	0.8325
D(SETI(-1))	-0.208079	0.088983	-2.338403	0.0201
D(CTW(-1))	-0.057198	0.065367	-0.875027	0.3824
RESID01(-1)	-0.997439	0.094125	-10.59693	0.0000

R-squared	0.513179	Mean dependent var	2.24E-17
Adjusted R-squared	0.507429	S.D. dependent var	12.18951
S.E. of regression	8.555014	Akaike info criterion	7.146294
Sum squared resid	18589.82	Schwarz criterion	7.201379
Log likelihood	-917.8720	F-statistic	89.25065
Durbin-Watson stat	2.036729	Prob(F-statistic)	0.000000

แบบจำลองสมการถดถอยแบบสลับเปลี่ยน

1. ภาวะขาขึ้น

Dependent Variable: CTW
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:46
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBIT
Convergence achieved after 7 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	9.356420	1.336463	7.000884	0.0000
SETI	1.299542	0.241586	5.379216	0.0000
		Error Distribution		
SCALE:C(3)	14.68296	1.125877	13.04135	0.0000
Mean dependent var	0.256890	S.D. dependent var		8.480768
Akaike info criterion	3.874361	Schwarz criterion		3.915446
Log likelihood	-500.6670	Hannan-Quinn criter.		3.890878
Avg. log likelihood	-1.925642			
Left censored obs	0	Right censored obs		158
Uncensored obs	102	Total obs		260

2. ภาวะขาลง

Dependent Variable: CTW
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:46
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBITTY
Convergence achieved after 8 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	5.120770	0.542769	9.434531	0.0000
SETI	0.022171	0.117092	0.189348	0.8498
		Error Distribution		
SCALE:C(3)	7.026746	0.370675	18.95663	0.0000
Mean dependent var	0.256890	S.D. dependent var		8.480768
Akaike info criterion	4.276145	Schwarz criterion		4.317230
Log likelihood	-552.8989	Hannan-Quinn criter.		4.292662
Avg. log likelihood	-2.126534			
Left censored obs	0	Right censored obs		102
Uncensored obs	158	Total obs		260

3. ทั้งภาวะขาขึ้น และขาลง

```
+-----------------------------------------------------------------------------+
| Switching Regressions                                                       |
| Ordinary    least squares regression    Weighting variable = none           |
| Dep. var. = CTW      Mean=   4.350271271    , S.D.=   7.461651862           |
| Model size: Observations =      158, Parameters =   2, Deg.Fr.=    156      |
| Residuals:  Sum of squares= 8703.244741     , Std.Dev.=          7.46927    |
| Fit:        R-squared=  .004339, Adjusted R-squared =            -.00204    |
| Model test: F[  1,    156] =     .68,    Prob value =             .41091    |
| Diagnostic: Log-L =    -540.8919, Restricted(b=0) Log-L =      -541.2354    |
|             LogAmemiyaPrCrt.=    4.034, Akaike Info. Crt.=        6.872     |
| OLS estimates of equation 1                                                 |
+-----------------------------------------------------------------------------+
```

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]	Mean of X
Constant	4.264804438	.61030450	6.988	.0000	
SETI	.6308777111E-01	.10273392	.614	.5392	1.3547290

```
+-----------------------------------------------------------------------------+
| Switching Regressions                                                       |
| Ordinary    least squares regression    Weighting variable = none           |
| Dep. var. = CTW      Mean=  -6.083838556    , S.D.=   5.574606961           |
| Model size: Observations =      102, Parameters =   2, Deg.Fr.=    100      |
| Residuals:  Sum of squares= 3069.553902     , Std.Dev.=          5.54036    |
| Fit:        R-squared=  .022030, Adjusted R-squared =             .01225    |
| Model test: F[  1,    100] =    2.25,    Prob value =             .13654    |
| Diagnostic: Log-L =    -318.3518, Restricted(b=0) Log-L =      -319.4879    |
|             LogAmemiyaPrCrt.=    3.444, Akaike Info. Crt.=        6.281     |
| OLS estimates of equation 0                                                 |
+-----------------------------------------------------------------------------+
```

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]	Mean of X
Constant	-5.739228266	.56743577	-10.114	.0000	
SETI	.1863546193	.78451975E-01	2.375	.0175	-1.8492179

Normal exit from iterations. Exit status=0.

```
+---------------------------------------------+
| Switching Regressions                       |
| Maximum Likelihood Estimates                |
| Dependent variable                  CTW     |
| Weighting variable                  ONE     |
| Number of observations              260     |
| Iterations completed                 13     |
| Log likelihood function       -1053.566     |
| Sample separation variable is TOBIT         |
| CTW       is the minimum  of y*(1) and y*(0) |
+---------------------------------------------+
```

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]	Mean of X
RHS for Regime 1					
Constant	9.356425092	1.2993152	7.201	.0000	
SETI	1.299542201	.29879005	4.349	.0000	1.3547290
RHS for Regime 2					
Constant	5.120771599	.88578650	5.781	.0000	
SETI	.2217033439E-01	.12203504	.182	.8558	-1.8492179
Sigma(1)	14.68296199	1.6766002	8.758	.0000	
Sigma(0)	7.026748084	.29634016	23.712	.0000	

ภาคผนวก ฉ

ผลการทดสอบจากโปรแกรมคอมพิวเตอร์ของหลักทรัพย์
บริษัทกันยงอีเลคทริกจำกัด(มหาชน)

การทดสอบยูนิทรูท

1. แนวเดินเชิงสุ่ม และจุดตัดแกน

ADF Test Statistic	-14.90158	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(KYE)
Method: Least Squares
Date: 04/25/03 Time: 18:25
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
KYE(-1)	-0.925949	0.062138	-14.90158	0.0000
C	0.586322	0.459788	1.275200	0.2034

R-squared	0.463529	Mean dependent var	0.019305
Adjusted R-squared	0.461442	S.D. dependent var	10.04845
S.E. of regression	7.374204	Akaike info criterion	6.841545
Sum squared resid	13975.37	Schwarz criterion	6.869011
Log likelihood	-883.9801	F-statistic	222.0571
Durbin-Watson stat	2.006317	Prob(F-statistic)	0.000000

2. แนวเดินเชิงสุ่ม จุดตัดแกน และแนวโน้ม

ADF Test Statistic	-15.00584	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(METCO)
Method: Least Squares
Date: 04/25/03 Time: 18:13
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
METCO(-1)	-0.935860	0.062366	-15.00584	0.0000
C	1.876486	1.212489	1.547631	0.1229
@TREND(1/11/1998)	-0.006207	0.008053	-0.770786	0.4415

R-squared	0.467970	Mean dependent var	0.002758
Adjusted R-squared	0.463813	S.D. dependent var	13.21632
S.E. of regression	9.677623	Akaike info criterion	7.389025
Sum squared resid	23976.03	Schwarz criterion	7.430224
Log likelihood	-953.8787	F-statistic	112.5878
Durbin-Watson stat	2.023743	Prob(F-statistic)	0.000000

3. แนวเดินเชิงสุ่ม

ADF Test Statistic	-14.82899	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(KYE)
Method: Least Squares
Date: 04/25/03 Time: 18:26
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
KYE(-1)	-0.919392	0.062000	-14.82899	0.0000

R-squared	0.460135	Mean dependent var	0.019305
Adjusted R-squared	0.460135	S.D. dependent var	10.04845
S.E. of regression	7.383147	Akaike info criterion	6.840131
Sum squared resid	14063.80	Schwarz criterion	6.853863
Log likelihood	-884.7969	Durbin-Watson stat	2.007656

การทดสอบการร่วมกันไปด้วยกัน

Dependent Variable: KYE
Method: Least Squares
Date: 04/25/03 Time: 18:27
Sample: 1/11/1998 12/29/2002
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.566716	0.438702	1.291804	0.1976
SETI	0.442662	0.091162	4.855780	0.0000

R-squared	0.083737	Mean dependent var	0.610007
Adjusted R-squared	0.080186	S.D. dependent var	7.374221
S.E. of regression	7.072390	Akaike info criterion	6.757937
Sum squared resid	12904.83	Schwarz criterion	6.785327
Log likelihood	-876.5318	F-statistic	23.57860
Durbin-Watson stat	1.892619	Prob(F-statistic)	0.000002

Estimation Command:
=====================
LS KYE C SETI

Estimation Equation:
=====================
KYE = C(1) + C(2)*SETI

Substituted Coefficients:
=====================
KYE = 0.5667163078 + 0.4426621876*SETI

การทดสอบยูนิทรูทโดยใช้ส่วนที่เหลือ

1. แนวเดินเชิงสุ่ม

ADF Test Statistic	-15.23130	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(E)
Method: Least Squares
Date: 04/25/03 Time: 18:28
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
E(-1)	-0.946691	0.062154	-15.23130	0.0000
R-squared	0.473461	Mean dependent var		0.005425
Adjusted R-squared	0.473461	S.D. dependent var		9.729661
S.E. of regression	7.060133	Akaike info criterion		6.750658
Sum squared resid	12860.13	Schwarz criterion		6.764391
Log likelihood	-873.2103	Durbin-Watson stat		2.001450

แบบจำลองเอเรอร์คอร์เรคชัน

Dependent Variable: D(KYE)
Method: Least Squares
Date: 04/25/03 Time: 18:31
Sample(adjusted): 1/25/1998 12/29/2002
Included observations: 258 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007561	0.447346	0.016902	0.9865
D(SETI(-1))	-0.293344	0.074658	-3.929188	0.0001
D(KYE(-1))	-0.008682	0.063383	-0.136983	0.8912
E(-1)	-0.976085	0.087506	-11.15451	0.0000
R-squared	0.495194	Mean dependent var		-0.013600
Adjusted R-squared	0.489232	S.D. dependent var		10.05399
S.E. of regression	7.185385	Akaike info criterion		6.797358
Sum squared resid	13113.96	Schwarz criterion		6.852442
Log likelihood	-872.8592	F-statistic		83.05468
Durbin-Watson stat	2.063099	Prob(F-statistic)		0.000000

แบบจำลองสมการถดถอยแบบสลับเปลี่ยน

1. ภาวะขาขึ้น

Dependent Variable: KYE
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:32
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBIT
Convergence achieved after 7 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	8.431923	1.131174	7.454133	0.0000
SETI	1.174340	0.203922	5.758759	0.0000
		Error Distribution		
SCALE:C(3)	12.40978	0.931647	13.32026	0.0000
Mean dependent var	0.610007	S.D. dependent var		7.374221
Akaike info criterion	3.742315	Schwarz criterion		3.783400
Log likelihood	-483.5009	Hannan-Quinn criter.		3.758832
Avg. log likelihood	-1.859619			
Left censored obs	0	Right censored obs		157
Uncensored obs	103	Total obs		260

2. ภาวะขาลง

Dependent Variable: KYE
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:32
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBITTY
Convergence achieved after 7 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	4.780292	0.492539	9.705418	0.0000
SETI	-0.039730	0.107806	-0.368533	0.7125
		Error Distribution		
SCALE:C(3)	6.350823	0.337007	18.84476	0.0000
Mean dependent var	0.610007	S.D. dependent var		7.374221
Akaike info criterion	4.151801	Schwarz criterion		4.192886
Log likelihood	-536.7342	Hannan-Quinn criter.		4.168318
Avg. log likelihood	-2.064362			
Left censored obs	0	Right censored obs		103
Uncensored obs	157	Total obs		260

3. ทั้งภาวะขาขึ้น และขาลง

```
+-----------------------------------------------------------------------+
| Switching Regressions                                                 |
| Ordinary    least squares regression    Weighting variable = none     |
| Dep. var. = KYE      Mean=   3.869303244     , S.D.=   6.754289915    |
| Model size: Observations =       157, Parameters =   2, Deg.Fr.=   155 |
| Residuals:  Sum of squares= 7173.162447     , Std.Dev.=         6.80283 |
| Fit:        R-squared= -.007921, Adjusted R-squared =          -.01442 |
| Diagnostic: Log-L =   -522.7891, Restricted(b=0) Log-L =    -522.1697 |
|             LogAmemiyaPrCrt.=    3.847, Akaike Info. Crt.=      6.685 |
| OLS estimates of equation 1                                           |
+-----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant  3.445697175      .56282383         6.122   .0000
 SETI      .2784655423      .97511037E-01     2.856   .0043  1.5212154
```

```
+-----------------------------------------------------------------------+
| Switching Regressions                                                 |
| Ordinary    least squares regression    Weighting variable = none     |
| Dep. var. = KYE      Mean=  -4.358051027     , S.D.=   5.199347305    |
| Model size: Observations =       103, Parameters =   2, Deg.Fr.=   101 |
| Residuals:  Sum of squares= 2651.540628     , Std.Dev.=         5.12376 |
| Fit:        R-squared=  .038387, Adjusted R-squared =           .02887 |
| Model test: F[  1,    101] =     4.03,    Prob value =          .04732 |
| Diagnostic: Log-L =   -313.4313, Restricted(b=0) Log-L =    -315.4471 |
|             LogAmemiyaPrCrt.=    3.287, Akaike Info. Crt.=      6.125 |
| OLS estimates of equation 0                                           |
+-----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant -4.064605863      .52710238        -7.711   .0000
 SETI      .1416321730      .73125684E-01     1.937   .0528 -2.0718821
```

Normal exit from iterations. Exit status=0.

```
+----------------------------------------------+
| Switching Regressions                        |
| Maximum Likelihood Estimates                 |
| Dependent variable                 KYE       |
| Weighting variable                 ONE       |
| Number of observations             260       |
| Iterations completed                13       |
| Log likelihood function       -1020.235      |
| Sample separation variable is TOBIT          |
| KYE      is the minimum   of y*(1) and y*(0) |
+----------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
         RHS for Regime 1
 Constant  8.431921041      1.1141719         7.568   .0000
 SETI      1.174338932      .19257661         6.098   .0000  1.5212154
         RHS for Regime 2
 Constant  4.780288578      .83215056         5.744   .0000
 SETI     -.3972961997E-01  .10579690         -.376   .7073 -2.0718821
 Sigma(1)  12.40978069      .99832062        12.431   .0000
 Sigma(0)  6.350822025      .22312040        28.464   .0000
```

ภาคผนวก ช

ผลการทดสอบจากโปรแกรมของหลักทรัพย์บริษัท
มูราโมโต้อีเล็คตรอนประเทศไทย
จำกัด(มหาชน)

การทดสอบยูนิทรูท

1. แนวเดินเชิงสุ่ม และจุดตัดแกน

ADF Test Statistic	-14.99789	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(METCO)
Method: Least Squares
Date: 04/25/03 Time: 18:12
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
METCO(-1)	-0.933447	0.062239	-14.99789	0.0000
C	1.066801	0.605037	1.763199	0.0791

R-squared	0.466735	Mean dependent var	0.002758
Adjusted R-squared	0.464660	S.D. dependent var	13.21632
S.E. of regression	9.669978	Akaike info criterion	7.383621
Sum squared resid	24031.68	Schwarz criterion	7.411087
Log likelihood	-954.1789	F-statistic	224.9367
Durbin-Watson stat	2.024842	Prob(F-statistic)	0.000000

2. แนวเดินเชิงสุ่ม จุดตัดแกน และแนวโน้ม

ADF Test Statistic	-15.00584	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(METCO)
Method: Least Squares
Date: 04/25/03 Time: 18:13
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
METCO(-1)	-0.935860	0.062366	-15.00584	0.0000
C	1.876486	1.212489	1.547631	0.1229
@TREND(1/11/1998)	-0.006207	0.008053	-0.770786	0.4415

R-squared	0.467970	Mean dependent var	0.002758
Adjusted R-squared	0.463813	S.D. dependent var	13.21632
S.E. of regression	9.677623	Akaike info criterion	7.389025
Sum squared resid	23976.03	Schwarz criterion	7.430224
Log likelihood	-953.8787	F-statistic	112.5878
Durbin-Watson stat	2.023743	Prob(F-statistic)	0.000000

3. แนวเดินเชิงสุ่ม

ADF Test Statistic	-14.83339	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(METCO)
Method: Least Squares
Date: 04/25/03 Time: 18:13
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
METCO(-1)	-0.920579	0.062061	-14.83339	0.0000

R-squared	0.460284	Mean dependent var	0.002758
Adjusted R-squared	0.460284	S.D. dependent var	13.21632
S.E. of regression	9.709418	Akaike info criterion	7.387923
Sum squared resid	24322.38	Schwarz criterion	7.401656
Log likelihood	-955.7361	Durbin-Watson stat	2.031467

การทดสอบการร่วมกันไปด้วยกัน

Dependent Variable: METCO
Method: Least Squares
Date: 04/25/03 Time: 18:14
Sample: 1/11/1998 12/29/2002
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.068865	0.561076	1.905028	0.0579
SETI	0.709697	0.116591	6.087054	0.0000

R-squared	0.125579	Mean dependent var	1.138271
Adjusted R-squared	0.122189	S.D. dependent var	9.654235
S.E. of regression	9.045202	Akaike info criterion	7.250009
Sum squared resid	21108.45	Schwarz criterion	7.277398
Log likelihood	-940.5011	F-statistic	37.05223
Durbin-Watson stat	1.811112	Prob(F-statistic)	0.000000

Estimation Command:
=====================
LS METCO C SETI

Estimation Equation:
=====================
METCO = C(1) + C(2)*SETI

Substituted Coefficients:
=====================
METCO = 1.068864631 + 0.7096965419*SETI

การทดสอบยูนิทรูทโดยใช้ส่วนที่เหลือ

1. แนวเดินเชิงสุ่ม

ADF Test Statistic	-14.61817	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(E)
Method: Least Squares
Date: 04/25/03 Time: 18:19
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
E(-1)	-0.905874	0.061969	-14.61817	0.0000

R-squared	0.453030	Mean dependent var	-0.019496
Adjusted R-squared	0.453030	S.D. dependent var	12.17280
S.E. of regression	9.002685	Akaike info criterion	7.236776
Sum squared resid	20910.47	Schwarz criterion	7.250509
Log likelihood	-936.1625	Durbin-Watson stat	2.024544

แบบจำลองเอเรอร์คอร์เรคชัน

Dependent Variable: D(METCO)
Method: Least Squares
Date: 04/25/03 Time: 18:20
Sample(adjusted): 1/25/1998 12/29/2002
Included observations: 258 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.020676	0.589526	-0.035072	0.9721
D(SETI(-1))	-0.431076	0.103256	-4.174832	0.0000
D(METCO(-1))	-0.151732	0.065560	-2.314405	0.0214
E(-1)	-0.794586	0.088178	-9.011170	0.0000

R-squared	0.494123	Mean dependent var	-0.023071
Adjusted R-squared	0.488149	S.D. dependent var	13.23546
S.E. of regression	9.469150	Akaike info criterion	7.349338
Sum squared resid	22774.86	Schwarz criterion	7.404422
Log likelihood	-944.0646	F-statistic	82.69959
Durbin-Watson stat	2.101170	Prob(F-statistic)	0.000000

แบบจำลองสมการถดถอยแบบสลับเปลี่ยน

1. ภาวะขาขึ้น

Dependent Variable: METCO
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:21
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBIT
Convergence achieved after 6 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	9.325377	1.224521	7.615528	0.0000
SETI	1.654699	0.238967	6.924394	0.0000
		Error Distribution		
SCALE:C(3)	14.40457	1.005704	14.32287	0.0000
Mean dependent var	1.138271	S.D. dependent var		9.654235
Akaike info criterion	4.254028	Schwarz criterion		4.295113
Log likelihood	-550.0237	Hannan-Quinn criter.		4.270545
Avg. log likelihood	-2.115476			
Left censored obs	0	Right censored obs		144
Uncensored obs	116	Total obs		260

2. ภาวะขาลง

Dependent Variable: METCO
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:21
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBITTY
Convergence achieved after 7 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	7.473153	0.748341	9.986288	0.0000
SETI	0.026864	0.155276	0.173007	0.8626
		Error Distribution		
SCALE:C(3)	9.276925	0.508841	18.23149	0.0000
Mean dependent var	1.138271	S.D. dependent var		9.654235
Akaike info criterion	4.277629	Schwarz criterion		4.318714
Log likelihood	-553.0918	Hannan-Quinn criter.		4.294146
Avg. log likelihood	-2.127276			
Left censored obs	0	Right censored obs		116
Uncensored obs	144	Total obs		260

3. ทั้งภาวะขาขึ้น และขาลง

```
+----------------------------------------------------------------------+
| Switching Regressions                                                |
| Ordinary    least squares regression    Weighting variable = none    |
| Dep. var. = METCO    Mean=   5.926359946    , S.D.=   10.03866110    |
| Model size: Observations =      144, Parameters =   2, Deg.Fr.=   142 |
| Residuals:  Sum of squares= 14228.84167     , Std.Dev.=     10.01015 |
| Fit:        R-squared=  .012625, Adjusted R-squared =          .00567 |
| Model test: F[  1,     142] =    1.82,    Prob value =         .17997 |
| Diagnostic: Log-L =   -535.0385, Restricted(b=0) Log-L =   -535.9533 |
|             LogAmemiyaPrCrt.=    4.621, Akaike Info. Crt.=      7.459 |
| OLS estimates of equation 1                                          |
+----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant  5.458276001      .86985765        6.275   .0000
 SETI      .2689019089      .14164871        1.898   .0576  1.7407238
```

```
+----------------------------------------------------------------------+
| Switching Regressions                                                |
| Ordinary    least squares regression    Weighting variable = none    |
| Dep. var. = METCO    Mean=  -4.805564086    , S.D.=    4.500839297   |
| Model size: Observations =      116, Parameters =   2, Deg.Fr.=   114 |
| Residuals:  Sum of squares= 1908.081866     , Std.Dev.=      4.09116 |
| Fit:        R-squared=  .180947, Adjusted R-squared =          .17376 |
| Model test: F[  1,     114] =   25.19,    Prob value =         .00000 |
| Diagnostic: Log-L =   -327.0122, Restricted(b=0) Log-L =   -338.5893 |
|             LogAmemiyaPrCrt.=    2.835, Akaike Info. Crt.=      5.673 |
| OLS estimates of equation 0                                          |
+----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant -4.142760482      .39627638      -10.454   .0000
 SETI      .3413521230      .58143185E-01    5.871   .0000 -1.9417005
```

```
Normal exit from iterations. Exit status=0.
```

```
+----------------------------------------------+
| Switching Regressions                        |
| Maximum Likelihood Estimates                 |
| Dependent variable                  METCO    |
| Weighting variable                    ONE    |
| Number of observations                260    |
| Iterations completed                   12    |
| Log likelihood function         -1103.116    |
| Sample separation variable is TOBIT          |
| METCO     is the minimum  of y*(1) and y*(0) |
+----------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
          RHS for Regime 1
 Constant  9.325380585     1.1924715         7.820   .0000
 SETI      1.654695239     .32548982         5.084   .0000  1.7407238
          RHS for Regime 2
 Constant  7.473154529     1.1998352         6.228   .0000
 SETI      .2686294020E-01 .20156176          .133   .8940 -1.9417005
 Sigma(1)  14.40457694     1.9247452         7.484   .0000
 Sigma(0)  9.276926309     .55115297        16.832   .0000
```

ภาคผนวก ซ

ผลการทดสอบจากโปรแกรมของหลักทรัพย์
บริษัทซิงเกอร์ประเทศไทย
จำกัด(มหาชน)

การทดสอบยูนิทรูท

1. แนวเดินเชิงสุ่ม และจุดตัดแกน

ADF Test Statistic	-17.89738	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(SINGER)
Method: Least Squares
Date: 04/25/03 Time: 17:55
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SINGER(-1)	-1.102309	0.061591	-17.89738	0.0000
C	0.896444	0.591567	1.515372	0.1309

R-squared	0.554837	Mean dependent var	0.072695
Adjusted R-squared	0.553104	S.D. dependent var	14.19816
S.E. of regression	9.491506	Akaike info criterion	7.346364
Sum squared resid	23152.79	Schwarz criterion	7.373830
Log likelihood	-949.3541	F-statistic	320.3161
Durbin-Watson stat	1.971115	Prob(F-statistic)	0.000000

2. แนวเดินเชิงสุ่ม จุดตัดแกน และแนวโน้ม

ADF Test Statistic	-17.86540	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(SINGER)
Method: Least Squares
Date: 04/25/03 Time: 17:56
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SINGER(-1)	-1.102350	0.061703	-17.86540	0.0000
C	1.158649	1.186132	0.976830	0.3296
@TREND(1/11/1998)	-0.002017	0.007903	-0.255197	0.7988

R-squared	0.554950	Mean dependent var	0.072695
Adjusted R-squared	0.551473	S.D. dependent var	14.19816
S.E. of regression	9.508817	Akaike info criterion	7.353831
Sum squared resid	23146.90	Schwarz criterion	7.395030
Log likelihood	-949.3212	F-statistic	159.6080
Durbin-Watson stat	1.971533	Prob(F-statistic)	0.000000

3. แนวเดินเชิงสุ่ม

ADF Test Statistic	-17.78890	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(SINGER)
Method: Least Squares
Date: 04/25/03 Time: 17:56
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SINGER(-1)	-1.095048	0.061558	-17.78890	0.0000

R-squared	0.550859	Mean dependent var	0.072695
Adjusted R-squared	0.550859	S.D. dependent var	14.19816
S.E. of regression	9.515322	Akaike info criterion	7.347537
Sum squared resid	23359.67	Schwarz criterion	7.361270
Log likelihood	-950.5061	Durbin-Watson stat	1.968166

การทดสอบการร่วมกันไปด้วยกัน

Dependent Variable: SINGER
Method: Least Squares
Date: 04/25/03 Time: 17:57
Sample: 1/11/1998 12/29/2002
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.664280	0.536807	1.237465	0.2170
SETI	0.857631	0.111548	7.688443	0.0000

R-squared	0.186408	Mean dependent var	0.748153
Adjusted R-squared	0.183254	S.D. dependent var	9.575723
S.E. of regression	8.653963	Akaike info criterion	7.161574
Sum squared resid	19321.90	Schwarz criterion	7.188964
Log likelihood	-929.0047	F-statistic	59.11215
Durbin-Watson stat	2.384157	Prob(F-statistic)	0.000000

Estimation Command:
=====================
LS SINGER C SETI

Estimation Equation:
=====================
SINGER = C(1) + C(2)*SETI

Substituted Coefficients:
=====================
SINGER = 0.6642797585 + 0.8576313073*SETI

การทดสอบยูนิทรูทโดยใช้ส่วนที่เหลือ

1. แนวเดินเชิงสุ่ม

ADF Test Statistic	-19.69670	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(RESID01)
Method: Least Squares
Date: 04/25/03 Time: 18:04
Sample(adjusted): 1/18/1998 12/29/2002
Included observations: 259 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01(-1)	-1.196694	0.060756	-19.69670	0.0000

R-squared	0.600590	Mean dependent var	0.045792
Adjusted R-squared	0.600590	S.D. dependent var	13.36239
S.E. of regression	8.444882	Akaike info criterion	7.108852
Sum squared resid	18399.54	Schwarz criterion	7.122585
Log likelihood	-919.5963	Durbin-Watson stat	2.033434

แบบจำลองเอเรอร์คอร์เรคชัน

Dependent Variable: D(SINGER)
Method: Least Squares
Date: 04/25/03 Time: 18:06
Sample(adjusted): 1/25/1998 12/29/2002
Included observations: 258 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.021158	0.565504	0.037414	0.9702
D(SETI(-1))	-0.630875	0.104001	-6.066029	0.0000
D(SINGER(-1))	0.128522	0.066674	1.927623	0.0550
RESID01(-1)	-1.367584	0.103610	-13.19935	0.0000

R-squared	0.588429	Mean dependent var	-0.055219
Adjusted R-squared	0.583568	S.D. dependent var	14.07544
S.E. of regression	9.083098	Akaike info criterion	7.266090
Sum squared resid	20955.68	Schwarz criterion	7.321175
Log likelihood	-933.3256	F-statistic	121.0491
Durbin-Watson stat	2.031292	Prob(F-statistic)	0.000000

แบบจำลองสมการถดถอยแบบสลับเปลี่ยน

1. ภาวะขาขึ้น

Dependent Variable: SINGER
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:07
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBIT
Convergence achieved after 7 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	8.174666	1.168040	6.998620	0.0000
SETI	1.621366	0.224760	7.213754	0.0000
		Error Distribution		
SCALE:C(3)	14.04650	0.988009	14.21698	0.0000
Mean dependent var	0.748153	S.D. dependent var		9.575723
Akaike info criterion	4.322898	Schwarz criterion		4.363983
Log likelihood	-558.9768	Hannan-Quinn criter.		4.339415
Avg. log likelihood	-2.149911			
Left censored obs	0	Right censored obs		142
Uncensored obs	118	Total obs		260

2. ภาวะขาลง

Dependent Variable: SINGER
Method: ML - Censored Normal (TOBIT)
Date: 04/25/03 Time: 18:07
Sample: 1/11/1998 12/29/2002
Included observations: 260
Left censoring (indicator) series: 0
Right censoring (indicator) series: TOBITTY
Convergence achieved after 7 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	6.585990	0.637210	10.33566	0.0000
SETI	0.466344	0.125596	3.713040	0.0002
		Error Distribution		
SCALE:C(3)	7.963345	0.441066	18.05476	0.0000
Mean dependent var	0.748153	S.D. dependent var		9.575723
Akaike info criterion	4.047255	Schwarz criterion		4.088340
Log likelihood	-523.1432	Hannan-Quinn criter.		4.063772
Avg. log likelihood	-2.012089			
Left censored obs	0	Right censored obs		118
Uncensored obs	142	Total obs		260

3. ทั้งภาวะขาขึ้น และขาลง

```
+-----------------------------------------------------------------------+
| Switching Regressions                                                 |
| Ordinary    least squares regression    Weighting variable = none     |
| Dep. var. = SINGER   Mean=   6.021883509    , S.D.=   9.170407966     |
| Model size: Observations =     142, Parameters =   2, Deg.Fr.=    140 |
| Residuals:  Sum of squares= 10181.79227     , Std.Dev.=       8.52802 |
| Fit:        R-squared=  .141327, Adjusted R-squared =          .13519 |
| Model test: F[  1,     140] =   23.04,     Prob value =         .00000 |
| Diagnostic: Log-L =    -504.8389, Restricted(b=0) Log-L =   -515.6569 |
|             LogAmemiyaPrCrt.=     4.301, Akaike Info. Crt.=     7.139 |
| OLS estimates of equation 1                                           |
+-----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant  4.878977063      .74242922         6.572   .0000
 SETI      .6834805215      .11815780         5.784   .0000  1.6721858


+-----------------------------------------------------------------------+
| Switching Regressions                                                 |
| Ordinary    least squares regression    Weighting variable = none     |
| Dep. var. = SINGER   Mean=  -5.598196428    , S.D.=   5.221050937     |
| Model size: Observations =     118, Parameters =   2, Deg.Fr.=    116 |
| Residuals:  Sum of squares= 3389.494865     , Std.Dev.=       5.40553 |
| Fit:        R-squared= -.062755, Adjusted R-squared =         -.07192 |
| Diagnostic: Log-L =    -365.5421, Restricted(b=0) Log-L =   -361.9511 |
|             LogAmemiyaPrCrt.=     3.392, Akaike Info. Crt.=     6.230 |
| OLS estimates of equation 0                                           |
+-----------------------------------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
 Constant -4.779528794      .51672176        -9.250   .0000
 SETI      .4556231430      .77469600E-01     5.881   .0000 -1.7968087

Normal exit from iterations. Exit status=0.

              +----------------------------------------------+
              | Switching Regressions                        |
              | Maximum Likelihood Estimates                 |
              | Dependent variable                SINGER     |
              | Weighting variable                   ONE     |
              | Number of observations               260     |
              | Iterations completed                  13     |
              | Log likelihood function        -1082.120     |
              | Sample separation variable is TOBIT          |
              | SINGER   is the minimum  of y*(1) and y*(0)  |
              +----------------------------------------------+
+---------+--------------+----------------+--------+---------+----------+
|Variable | Coefficient  | Standard Error |b/St.Er.|P[|Z|>z] | Mean of X|
+---------+--------------+----------------+--------+---------+----------+
          RHS for Regime 1
 Constant  8.174666888      1.1123764         7.349   .0000
 SETI      1.621366491      .29125084         5.567   .0000  1.6721858
          RHS for Regime 2
 Constant  6.585988570      .96206902         6.846   .0000
 SETI      .4663442414      .13204769         3.532   .0004 -1.7968087
 Sigma(1)  14.04649357      1.2523936        11.216   .0000
 Sigma(0)  7.963343896      .44717277        17.808   .0000
```

ประวัติผู้เขียน

ชื่อ นายอนุพัฒน์ สิทธิโชคชัยวุฒิ

วัน เดือน ปี เกิด 30 กันยายน 2522

ประวัติการศึกษา สำเร็จการศึกษามัธยมศึกษาตอนปลาย โรงเรียนยุพราชวิทยาลัย เชียงใหม่ ปีการศึกษา 2539

สำเร็จการศึกษาปริญญาวิศวกรรมศาสตรบัณฑิต สาขาวิชาวิศวกรรมอุตสาหการ มหาวิทยาลัยเชียงใหม่ ปีการศึกษา 2543

ประสบการณ์ บริษัทไทยพรีซิชั่นแมนูแฟคเจอริ่งจำกัด อ.ศรีราชา จ.ชลบุรี
ตั้งแต่วันที่ 15 มีนาคม 2543 – 15 พฤษภาคม 2543 ระยะเวลา 2 เดือน
ตำแหน่งนักศึกษาฝึกงานภาคฤดูร้อน (ฝ่ายการผลิต)

1. ศึกษาพัฒนา และปรับปรุงกระบวนการผลิตให้มีประสิทธิภาพมากขึ้น
2. ศึกษาพัฒนา และปรับปรุงผังโรงงาน
3. เสนอการวางแผนออกแบบการใช้เครื่องจักรให้เหมาะสมกับปริมาณคน

บริษัทมูราตะอิเลคทรอนิคส์ประเทศไทยจำกัด อ.เมือง จ.ลำพูน
ตั้งแต่วันที่ 17 เมษายน 2544 – 30 กันยายน 2545 ระยะเวลา 1 ปี 6 เดือน
ตำแหน่งวิศวกรอุตสาหการ

1. ศึกษาพัฒนา และปรับปรุงกระบวนการผลิตให้มีประสิทธิภาพมากขึ้น
2. ศึกษาพัฒนา และปรับปรุงผังโรงงาน
3. ศึกษาพัฒนา และปรับปรุงลดค่าใช้จ่ายของการผลิต

ผลงานวิจัย บริษัทไทยวู้ดเด้นเกม อ.สันกำแพง จ.เชียงใหม่ ปีการศึกษา 2543

การวิจัย และพัฒนาผลิตภัณฑ์ของเล่นไม้

1. ศึกษากระบวนการผลิตผลิตภัณฑ์ของเล่นไม้
2. ศึกษาพัฒนา และปรับปรุงผลิตภัณฑ์ของเล่นไม้ชนิดเดิม
3. ศึกษา และออกแบบผลิตภัณฑ์ของเล่นไม้ชนิดใหม่
4. ทดลองทำต้นแบบผลิตภัณฑ์