APPENDIX A

DATA OF STUDY (YIELD SERIES)
COMPONENTS OF THE YIELD SERIES
SERIES NEEDED FOR STATISTICAL TEST
TRANSFORMED SERIES USED IN THIS STUDY

Table A1: Quarterly Production Per Hectare of Tea in Peninsular Malaysia From 1960: Q1 to 1996:Q4 (Yield Series)[a]

Year	Q1	Q2	Q3	Q4
1960:1	0.178432	0.191658	0.185880	0.200109
1961:1	0.175227	0.192338	0.186576	0.204868
1962:1	0.194346	0.244219	0.214581	0.248698
1963:1	0.184038	0.234623	0.221847	0.247269
1964:1	0.239432	0.281703	0.266411	0.250351
1965:1	0.243013	0.303170	0.289571	0.305010
1966:1	0.302762	0.324677	0.306994	0.310402
1967:1	0.263919	0.333608	0.287561	0.285500
1968:1	0.274788	0.327862	0.330364	0.343062
1969:1	0.311900	0.345763	0.306527	0.292788
1970:1	0.265687	0.305092	0.283971	0.297027
1971:1	0.279428	0.325994	0.288937	0.307628
1972:1	0.297455	0.336350	0.264304	0.324973
1973:1	0.290632	0.331226	0.313469	0.292664
1974:1	0.297191	0.331358	0.287072	0.297922
1975:1	0.281716	0.303222	0.294953	0.282259
1976:1	0.279348	0.322464	0.332327	0.292713
1977:1	0.266586	0.367988	0.339103	0.323998
1978:1	0.311648	0.367473	0.302857	0.332747
1979:1	0.316048	0.377291	0.383996	0.347370
1980:1	0.316046	0.423759	0.368794	0.310727
1981:1	0.272046	0.409612	0.298501	0.367284
1982:1	0.270361	0.358522	0.366919	0.340470
1983:1	0.279099	0.400501	0.358782	0.370463
1984:1	0.293004	0.426749	0.406996	0.391769
1985:1	0.333748	0.418734	0.372305	0.461028
1986:1	0.370306	0.550281	0.482089	0.520501
1987:1	0.436501	0.597691	0.576821	0.589698
1988:1	0.536628	0.578111	0.551192	0.509267
1989:1	0.450786	0.616212	0.506203	0.501654
1990:1	0.447159	0.486932	0.474913	0.475393
1991:1	0.467880	0.627258	0.615824	0.520468
1992:1	0.450660	0.583528	0.557653	0.453225
1993:1	0.407074	0.583968	0.550211	0.496770
1994:1	0.437563	0.640682	0.612529	0.563397
1995:1	0.451539	0.617500	0.591525	0.541061
1996:1	0.381618	0.588038	0.522234	0.410550

[a] Quarterly Yield is obtained by taking the ratio of quarterly production to average hectareage in production.Quarterly Production from Statistical Monthly Bulletin, Department of Statistics Malaysia. Average Hectareage in Production from Coca, Coconut And Tea Statistics Handbook, Department of Statistics Malaysia.

Table A2: Trend-Cycle (TC)[b] of Quarterly Production of Made Tea Per Hectare from 1960: Q1 to 1996:Q4

	Q1	Q2	Q3	Q4
1960:1	NA	NA	0.189020	0.188218
1961:1	0.188389	0.188562	0.189752	0.194532
1962:1	0.207502	0.214504	0.225461	0.222884
1963:1	0.220485	0.222301	0.221944	0.235793
1964:1	0.247563	0.258704	0.259474	0.260370
1965:1	0.265736	0.271526	0.285191	0.300128
1966:1	0.305505	0.309861	0.311209	0.301498
1967:1	0.303731	0.298873	0.292647	0.295364
1968:1	0.293928	0.304628	0.319019	0.328297
1969:1	0.332772	0.326813	0.314245	0.302691
1970:1	0.292523	0.286884	0.287944	0.291379
1971:1	0.296605	0.297847	0.300497	0.305003
1972:1	0.307592	0.301434	0.305771	0.304065
1973:1	0.302784	0.315075	0.306998	0.308638
1974:1	0.308671	0.302071	0.303386	0.299517
1975:1	0.292483	0.294453	0.290538	0.289945
1976:1	0.294756	0.304099	0.306713	0.303523
1977:1	0.314904	0.316597	0.324419	0.335684
1978:1	0.335555	0.326494	0.328681	0.329781
1979:1	0.332236	0.352521	0.356176	0.356176
1980:1	0.367793	0.363992	0.354832	0.343832
1981:1	0.340295	0.322721	0.336861	0.336440
1982:1	0.323667	0.340772	0.334068	0.336253
1983:1	0.346747	0.344713	0.352211	0.355687
1984:1	0.362249	0.374303	0.379630	0.389815
1985:1	0.387812	0.379139	0.396454	0.405593
1986:1	0.438480	0.465926	0.480794	0.497343
1987:1	0.509195	0.532879	0.550178	0.575210
1988:1	0.570315	0.563907	0.543799	0.522339
1989:1	0.531864	0.520617	0.518714	0.517807
1990:1	0.485487	0.477664	0.471099	0.476279
1991:1	0.511361	0.546589	0.557858	0.553553
1992:1	0.542620	0.528077	0.511266	0.500370
1993:1	0.500480	0.498619	0.509506	0.517128
1994:1	0.531306	0.546886	0.563543	0.567037
1995:1	0.561241	0.555990	0.550406	0.532926
1996:1	0.525560	0.508238	NA	NA

[b] TC is computed using 4-quarter centred moving average. $TC_t = \frac{1}{2}\left[\left(\frac{Y_{t-2}+Y_{t-1}+Y_t+Y_{t+1}}{4}\right)+\left(\frac{Y_{t-1}+Y_t+Y_{t+1}+Y_{t+2}}{4}\right)\right]$

Table A3: Specific Seasonal(S) and Rank

Point	S	Rank	Percent	Point	S	Rank	Percent
1	0.983388	84	41.90%	49	0.864385	128	11.10%
2	1.063177	40	72.70%	50	1.068762	38	74.10%
3	0.930134	117	18.80%	51	0.959866	104	27.90%
4	1.020025	62	57.30%	52	1.051261	46	68.50%
5	0.983262	85	41.20%	53	1.021078	61	58.00%
6	1.053133	44	69.90%	54	0.948244	107	25.80%
7	0.936596	115	20.20%	55	0.962808	100	30.70%
8	1.138532	12	92.30%	56	1.096954	25	83.20%
9	0.951742	105	27.20%	57	0.946227	109	24.40%
10	1.115816	19	87.40%	58	0.994675	79	45.40%
11	0.834695	136	5.50%	59	0.963188	99	31.40%
12	1.055429	43	70.60%	60	1.029781	56	61.50%
13	0.999561	77	46.80%	61	1.015196	69	52.40%
14	1.048671	47	67.80%	62	0.973492	91	37.00%
15	0.967157	94	34.90%	63	0.947726	108	25.10%
16	1.0889	29	80.40%	64	1.060392	41	72.00%
17	1.026734	58	60.10%	65	1.083511	31	79.00%
18	0.961522	102	29.30%	66	0.964385	98	32.10%
19	0.91449	122	15.30%	67	0.846563	133	7.60%
20	1.11654	16	89.50%	68	1.162323	7	95.80%
21	1.015357	67	53.80%	69	1.045262	51	65.00%
22	1.016267	66	54.50%	70	0.965187	97	32.80%
23	0.991021	81	44.00%	71	0.928754	118	18.10%
24	1.047816	49	66.40%	72	1.125512	14	90.90%
25	0.986457	82	43.30%	73	0.921431	119	17.40%
26	1.029532	57	60.80%	74	1.008994	72	50.30%
27	0.868924	127	11.80%	75	0.951276	106	26.50%
28	1.116224	17	88.80%	76	1.070265	37	74.80%
29	0.98262	86	40.50%	77	1.078107	33	77.60%
30	0.966605	96	33.50%	78	0.975276	89	38.40%
31	0.934883	116	19.50%	79	0.859304	130	9.70%
32	1.076265	34	76.90%	80	1.164199	6	96.50%
33	1.035563	55	62.20%	81	1.039348	54	62.90%
34	1.044975	52	64.30%	82	0.903718	125	13.20%
35	0.93728	114	20.90%	83	0.799442	143	.60%
36	1.057983	42	71.30%	84	1.269245	1	100.00%
37	0.975443	88	39.10%	85	0.886125	126	12.50%
38	0.967282	93	35.60%	86	1.091678	27	81.80%
39	0.908257	123	14.60%	87	0.835306	135	6.20%
40	1.063465	39	73.40%	88	1.052088	45	69.20%
41	0.986203	83	42.60%	89	1.098336	24	83.90%
42	1.019379	64	55.90%	90	1.012541	71	51.00%
43	0.942088	110	23.70%	91	0.804907	141	2.00%
44	1.094505	26	82.50%	92	1.161839	8	95.10%
45	0.96153	101	30.00%	93	1.018656	65	55.20%
46	1.008606	73	49.60%	94	1.041542	53	63.60%
47	0.967044	95	34.20%	95	0.808847	140	2.70%
48	1.115833	18	88.10%	96	1.140116	11	93.00%

Point	S	Rank	Percent
97	1.072086	36	75.50%
98	1.005013	75	48.20%
99	0.860592	129	10.40%
100	1.104434	22	85.30%
101	0.939088	113	21.60%
102	1.136676	13	91.60%
55	0.962808	100	30.70%
56	1.096954	25	83.20%
57	0.946227	109	24.40%
58	0.994675	79	45.40%
59	0.963188	99	31.40%
60	1.029781	56	61.50%
61	1.015196	69	52.40%
62	0.973492	91	37.00%
63	0.947726	108	25.10%
64	1.060392	41	72.00%
65	1.083511	31	79.00%
66	0.964385	98	32.10%
67	0.846563	133	7.60%
68	1.162323	7	95.80%
69	1.045262	51	65.00%
70	0.965187	97	32.80%
71	0.928754	118	18.10%
72	1.125512	14	90.90%
73	0.921431	119	17.40%
74	1.008994	72	50.30%
75	0.951276	106	26.50%
76	1.070265	37	74.80%
77	1.078107	33	77.60%
78	0.975276	89	38.40%
79	0.859304	130	9.70%
80	1.164199	6	96.50%
81	1.039348	54	62.90%
82	0.903718	125	13.20%
83	0.799442	143	.60%
84	1.269245	1	100.00%
85	0.886125	126	12.50%
86	1.091678	27	81.80%
87	0.835306	135	6.20%
88	1.052088	45	69.20%
89	1.098336	24	83.90%
90	1.012541	71	51.00%
91	0.804907	141	2.00%
92	1.161839	8	95.10%
93	1.018656	65	55.20%
94	1.041542	53	63.60%
95	0.808847	140	2.70%
96	1.140116	11	93.00%
97	1.072086	36	75.50%
98	1.005013	75	48.20%
99	0.860592	129	10.40%
100	1.104434	22	85.30%
101	0.939088	113	21.60%

Point	S	Rank	Percent
102	1.136676	13	91.60%
103	0.844522	134	6.90%
104	1.181048	3	98.60%
105	1.002693	76	47.50%
106	1.046563	50	65.70%
107	0.857237	131	9.00%
108	1.121626	15	90.20%
109	1.048426	48	67.10%
110	1.025187	60	58.70%
111	0.940933	111	23.00%
112	1.025189	59	59.40%
113	1.013595	70	51.70%
114	0.974974	90	37.70%
115	0.847559	132	8.30%
116	1.183619	2	99.30%
117	0.975881	87	39.80%
118	0.968805	92	36.30%
119	0.921052	120	16.70%
120	1.019403	63	56.60%
121	1.008096	74	48.90%
122	0.99814	78	46.10%
123	0.91497	121	16.00%
124	1.147587	10	93.70%
125	1.103909	23	84.60%
126	0.940231	112	22.30%
127	0.830527	137	4.80%
128	1.105005	21	86.00%
129	1.090728	28	81.10%
130	0.905779	124	13.90%
131	0.813368	139	3.40%
132	1.17117	5	97.20%
133	1.079892	32	78.30%
134	0.960633	103	28.60%
135	0.823559	138	4.10%
136	1.17151	4	97.90%
137	1.086925	30	79.70%
138	0.99358	80	44.70%
139	0.804537	142	1.30%
140	1.110632	20	86.70%
141	1.074706	35	76.20%
142	1.015265	68	53.10%
143	0.726116	144	.00%
144	1.157012	9	94.40%

Table A4: Calculation Output of R_i and H-Statistic

R_1	**4385**
R_2	**908**
R_3	**2493**
R_4	**2645**
H	**96.0307**

$R_1 = \sum_{i=1}^{143} S_i$, i = 3, 7, 11,..., 143

$R_2 = \sum_{i=1}^{144} S_i$, i = 4, 8, 12,..., 144

$R_3 = \sum_{i=1}^{141} S_i$, i = 1, 5, 9,..., 141

$R_4 = \sum_{i=1}^{142} S_i$, i = 2, 6, 10, ...,142

$H = \frac{12}{n(n+1)} \sum \frac{R_j^2}{n_j} - 3(n+1)$; j = 1,2, 3 and 4

Table A5: Yield(Y), Moving Average(MA), Seasonal Index(S) and Irregular (Detrended-Deseasonalised)[c] Term

Obs	Y	MA	S	ε
1960:1	0.178432	NA	0.887925	NA
1960:2	0.191658	NA	1.107887	NA
1960:3	0.185880	0.189020	1.011908	0.971816
1960:4	0.200109	0.188218	1.004587	1.058322
1961:1	0.175227	0.188389	0.887925	1.047537
1961:2	0.192338	0.188562	1.107887	0.920694
1961:3	0.186576	0.189752	1.011908	0.971691
1961:4	0.204868	0.194532	1.004587	1.048324
1962:1	0.194346	0.207502	0.887925	1.054815
1962:2	0.244219	0.214503	1.107887	1.027661
1962:3	0.214581	0.225461	1.011908	0.940542
1962:4	0.248698	0.222884	1.004587	1.110721
1963:1	0.184038	0.220485	0.887925	0.940051
1963:2	0.234623	0.222301	1.107887	0.952650
1963:3	0.221847	0.221944	1.011908	0.987798
1963:4	0.247269	0.235793	1.004587	1.043882
1964:1	0.239432	0.247563	0.887925	1.089233
1964:2	0.281703	0.258704	1.107887	0.982862
1964:3	0.266411	0.259474	1.011908	1.014651
1964:4	0.250351	0.260369	1.004587	0.957132
1965:1	0.243013	0.265736	0.887925	1.029918
1965:2	0.303170	0.271526	1.107887	1.007811
1965:3	0.289571	0.285191	1.011908	1.003408
1965:4	0.305010	0.300128	1.004587	1.011627
1966:1	0.302762	0.305505	0.887925	1.116109
1966:2	0.324677	0.309861	1.107887	0.945778
1966:3	0.306994	0.311209	1.011908	0.974848
1966:4	0.310402	0.301498	1.004587	1.024831
1967:1	0.263919	0.303731	0.887925	0.978600
1967:2	0.333608	0.298872	1.107887	1.007525
1967:3	0.287561	0.292647	1.011908	0.971057
1967:4	0.285500	0.295364	1.004587	0.962191
1968:1	0.274788	0.293928	0.887925	1.052885
1968:2	0.327862	0.304629	1.107887	0.971458
1968:3	0.330364	0.319019	1.011908	1.023377
1968:4	0.343062	0.328297	1.004587	1.040204
1969:1	0.311900	0.332772	0.887925	1.055584
1969:2	0.345763	0.326813	1.107887	0.954956
1969:3	0.306527	0.314244	1.011908	0.963964
1969:4	0.292788	0.302691	1.004587	0.962865
1970:1	0.265687	0.292524	0.887925	1.022898

[c] Irregular (Detrended-Deseasonalised) term = $Y_t / (S.Ma_t)$

1970:2	0.305092	0.286885	1.107887	0.959904
1970:3	0.283971	0.287944	1.011908	0.974598
1970:4	0.297027	0.291380	1.004587	1.014724
1971:1	0.279428	0.296605	0.887925	1.060999
1971:2	0.325994	0.297846	1.107887	0.987921
1971:3	0.288937	0.300497	1.011908	0.950215
1971:4	0.307628	0.305003	1.004587	1.004001
1972:1	0.297455	0.307592	0.887925	1.089106
1972:2	0.336350	0.301434	1.107887	1.007172
1972:3	0.264304	0.305771	1.011908	0.854213
1972:4	0.324973	0.304065	1.004587	1.063882
1973:1	0.290632	0.302784	0.887925	1.081021
1973:2	0.331226	0.315075	1.107887	0.948888
1973:3	0.313469	0.306998	1.011908	1.009062
1973:4	0.292664	0.308638	1.004587	0.943914
1974:1	0.297191	0.308671	0.887925	1.084335
1974:2	0.331358	0.302071	1.107887	0.990132
1974:3	0.287072	0.303386	1.011908	0.935092
1974:4	0.297922	0.299517	1.004587	0.990133
1975:1	0.281716	0.292483	0.887925	1.084762
1975:2	0.303222	0.294453	1.107887	0.929500
1975:3	0.294953	0.290538	1.011908	1.003249
1975:4	0.282259	0.289945	1.004587	0.969047
1976:1	0.279348	0.294756	0.887925	1.067349
1976:2	0.322464	0.304099	1.107887	0.957130
1976:3	0.332327	0.306713	1.011908	1.070761
1976:4	0.292713	0.303523	1.004587	0.959981
1977:1	0.266586	0.314904	0.887925	0.953417
1977:2	0.367988	0.316597	1.107887	1.049135
1977:3	0.339103	0.324419	1.011908	1.032962
1977:4	0.323998	0.335684	1.004587	0.960780
1978:1	0.311648	0.335555	0.887925	1.045982
1978:2	0.367473	0.326494	1.107887	1.015909
1978:3	0.302857	0.328681	1.011908	0.910588
1978:4	0.332747	0.329781	1.004587	1.004387
1979:1	0.316048	0.332236	0.887925	1.071347
1979:2	0.377291	0.352521	1.107887	0.966042
1979:3	0.383996	0.356176	1.011908	1.065420
1979:4	0.347370	0.356176	1.004587	0.970823
1980:1	0.316046	0.367793	0.887925	0.967766
1980:2	0.423759	0.363992	1.107887	1.050828
1980:3	0.368794	0.354832	1.011908	1.027117
1980:4	0.310727	0.343832	1.004587	0.899591
1981:1	0.272046	0.340295	0.887925	0.900348
1981:2	0.409612	0.322721	1.107887	1.145645
1981:3	0.298501	0.336861	1.011908	0.875697
1981:4	0.367284	0.336440	1.004587	1.086693
1982:1	0.270361	0.323667	0.887925	0.940739
1982:2	0.358522	0.340772	1.107887	0.949634
1982:3	0.366919	0.334068	1.011908	1.085411

1982:4	0.340470	0.336253	1.004587	1.007918
1983:1	0.279099	0.346747	0.887925	0.906503
1983:2	0.400501	0.344713	1.107887	1.048698
1983:3	0.358782	0.352211	1.011908	1.006669
1983:4	0.370463	0.355687	1.004587	1.036786
1984:1	0.293004	0.362249	0.887925	0.910941
1984:2	0.426749	0.374303	1.107887	1.029091
1984:3	0.406996	0.379630	1.011908	1.059470
1984:4	0.391769	0.389815	1.004587	1.000424
1985:1	0.333748	0.387812	0.887925	0.969217
1985:2	0.418734	0.379139	1.107887	0.996883
1985:3	0.372305	0.396454	1.011908	0.928036
1985:4	0.461028	0.405593	1.004587	1.131486
1986:1	0.370306	0.438480	0.887925	0.951119
1986:2	0.550281	0.465926	1.107887	1.066037
1986:3	0.482089	0.480794	1.011908	0.990894
1986:4	0.520501	0.497343	1.004587	1.041785
1987:1	0.436501	0.509195	0.887925	0.965439
1987:2	0.597691	0.532879	1.107887	1.012401
1987:3	0.576821	0.550178	1.011908	1.036088
1987:4	0.589698	0.575210	1.004587	1.020506
1988:1	0.536628	0.570315	0.887925	1.059698
1988:2	0.578111	0.563907	1.107887	0.925355
1988:3	0.551192	0.543799	1.011908	1.001667
1988:4	0.509267	0.522339	1.004587	0.970522
1989:1	0.450786	0.531864	0.887925	0.954539
1989:2	0.616212	0.520617	1.107887	1.068357
1989:3	0.506203	0.518714	1.011908	0.964397
1989:4	0.501654	0.517807	1.004587	0.964381
1990:1	0.447159	0.485487	0.887925	1.037309
1990:2	0.486932	0.477664	1.107887	0.920132
1990:3	0.474913	0.471099	1.011908	0.996233
1990:4	0.475393	0.476279	1.004587	0.993582
1991:1	0.467880	0.511361	0.887925	1.030458
1991:2	0.627258	0.546589	1.107887	1.035834
1991:3	0.615824	0.557858	1.011908	1.090918
1991:4	0.520468	0.553553	1.004587	0.935938
1992:1	0.450660	0.542620	0.887925	0.935357
1992:2	0.583528	0.528077	1.107887	0.997398
1992:3	0.557653	0.511267	1.011908	1.077893
1992:4	0.453225	0.500370	1.004587	0.901643
1993:1	0.407074	0.500480	0.887925	0.916032
1993:2	0.583968	0.498619	1.107887	1.057121
1993:3	0.550211	0.509506	1.011908	1.067184
1993:4	0.496770	0.517128	1.004587	0.956247
1994:1	0.437563	0.531307	0.887925	0.927509
1994:2	0.640682	0.546886	1.107887	1.057427
1994:3	0.612529	0.563543	1.011908	1.074135
1994:4	0.563397	0.567037	1.004587	0.989043
1995:1	0.451539	0.561241	0.887925	0.906087

1995:2	0.617500	0.555990	1.107887	1.002477
1995:3	0.591525	0.550406	1.011908	1.062059
1995:4	0.541061	0.532926	1.004587	1.010629
1996:1	0.381618	0.525560	0.887925	0.817767
1996:2	0.588038	0.508238	1.107887	1.044342
1996:3	0.433032	NA	1.011908	NA
1996:4	0.519694	NA	1.004587	NA

Table A6: Percentage Change in Trend-Cycle for Quarter1 (PCTCQ1), Quarter 2 (PCTCQ2), Quarter 3 (PCTCQ3) and Quarter 4 (PCTCQ4)

Obs	MA	PCTCQ1	PCTCQ2	PCTCQ3	PCtCQ4
1960:1	NA	NA	NA	NA	NA
1960:2	NA	NA	NA	NA	NA
1960:3	0.189020	NA	NA	NA	NA
1960:4	0.188218	0.424294	NA	NA	NA
1961:1	0.188389	0.090852	0.333827	NA	NA
1961:2	0.188562	0.091831	0.182767	0.242302	NA
1961:3	0.189752	0.631092	0.723503	0.815012	0.387261
1961:4	0.194532	2.519078	3.166067	3.260806	3.354621
1962:1	0.207502	6.667284	9.354315	10.04444	10.14550
1962:2	0.214503	3.373943	10.26618	13.04387	13.75728
1962:3	0.225461	5.108553	8.654856	15.89918	18.81877
1962:4	0.222884	1.142991	3.907171	7.412941	14.57447
1963:1	0.220485	1.076345	2.207034	2.788772	6.256807
1963:2	0.222301	0.823639	0.261571	1.401573	3.635380
1963:3	0.221944	0.160593	0.661723	0.421744	1.559915
1963:4	0.235793	6.239862	6.069248	6.942876	5.791802
1964:1	0.247563	4.991666	11.54300	11.36387	12.28111
1964:2	0.258704	4.500269	9.716573	16.56274	16.37554
1964:3	0.259474	0.297637	4.811301	10.04313	16.90967
1964:4	0.260369	0.344929	0.643593	5.172825	10.42270
1965:1	0.265736	2.061305	2.413344	2.718164	7.340758
1965:2	0.271526	2.178854	4.285072	4.644781	4.956243
1965:3	0.285191	5.032667	7.321176	9.533393	9.911205
1965:4	0.300128	5.237543	10.53380	12.94217	15.27025
1966:1	0.305505	1.791569	7.122946	12.51409	14.96560
1966:2	0.309861	1.425836	3.242950	8.650343	14.11835
1966:3	0.311209	0.435034	1.867073	3.692091	9.123009
1966:4	0.301498	3.120411	2.698952	1.311599	0.456472
1967:1	0.303731	0.740635	2.402887	1.978306	0.580678
1967:2	0.298872	1.599771	0.870984	3.964217	3.546429
1967:3	0.292647	2.082831	3.649282	2.935675	5.964480
1967:4	0.295364	0.928422	1.173747	2.754740	2.034508
1968:1	0.293928	0.486180	0.437729	1.654220	3.227527
1968:2	0.304629	3.640688	3.136807	4.094353	1.926243
1968:3	0.319019	4.723779	8.536444	8.008762	9.011539
1968:4	0.328297	2.908291	7.769451	11.69300	11.14997
1969:1	0.332772	1.363095	4.311028	9.238451	13.21548
1969:2	0.326813	1.790716	0.452030	2.443115	7.282301
1969:3	0.314244	3.845930	5.567776	4.280575	1.496776
1969:4	0.302691	3.676443	7.380979	9.039523	7.799645
1970:1	0.292524	3.358871	6.911826	10.49193	12.09477
1970:2	0.286885	1.927705	5.221827	8.706292	12.21738
1970:3	0.287944	0.369137	1.565683	4.871965	8.369293
1970:4	0.291380	1.193288	1.566830	0.391079	3.736814
1971:1	0.296605	1.793191	3.007877	3.388117	1.395099
1971:2	0.297846	0.418402	2.219095	3.438863	3.820695
1971:3	0.300497	0.890057	1.312183	3.128904	4.359528
1971:4	0.305003	1.499516	2.402920	2.831375	4.675338
1972:1	0.307592	0.848844	2.361088	3.272161	3.704253
1972:2	0.301434	2.002003	1.170152	0.311817	1.204649
1972:3	0.305771	1.438789	0.592018	0.251801	1.755092
1972:4	0.304065	0.557934	0.872828	1.146649	0.307538
1973:1	0.302784	0.421292	0.976875	0.447859	1.563110
1973:2	0.315075	4.059329	3.620936	3.042800	4.525369

1973:3	0.306998	2.563517	1.391751	0.964596	0.401281
1973:4	0.308638	0.534205	2.043006	1.933391	1.503955
1974:1	0.308671	0.010692	0.544955	2.032532	1.944290
1974:2	0.302071	2.138199	2.127735	1.604896	4.127271
1974:3	0.303386	0.435328	1.712179	1.701670	1.176555
1974:4	0.299517	1.275273	0.845497	2.965617	2.955242
1975:1	0.292483	2.348448	3.593772	3.174088	5.244419
1975:2	0.294453	0.673543	1.690722	2.944434	2.521924
1975:3	0.290538	1.329584	0.664996	2.997827	4.234869
1975:4	0.289945	0.204104	1.530974	0.867743	3.195812
1976:1	0.294756	1.659280	1.451789	0.102903	0.777139
1976:2	0.304099	3.169740	4.881615	4.667548	3.275905
1976:3	0.306713	0.859588	4.056576	5.783166	5.567258
1976:4	0.303523	1.040060	0.189412	2.974325	4.682957
1977:1	0.314904	3.749633	2.670575	3.553119	6.835484
1977:2	0.316597	0.537624	4.307417	3.222557	4.109846
1977:3	0.324419	2.470649	3.021556	6.884487	5.772823
1977:4	0.335684	3.472361	6.028800	6.598836	10.59590
1978:1	0.335555	0.038429	3.432598	5.988054	6.557872
1978:2	0.326494	2.700302	2.737694	0.639605	3.126056
1978:3	0.328681	0.669844	2.048546	2.086188	1.313733
1978:4	0.329781	0.334671	1.006757	1.720731	1.758499
1979:1	0.332236	0.744433	1.081596	1.758685	0.989108
1979:2	0.352521	6.105600	6.895485	7.253233	7.971663
1979:3	0.356176	1.036818	7.205721	8.003796	8.365254
1979:4	0.356176	0.000000	1.036818	7.205721	8.003796
1980:1	0.367793	3.261590	3.261590	4.332224	10.70233
1980:2	0.363992	1.033462	2.194421	2.194421	3.253991
1980:3	0.354832	2.516539	3.523993	0.377342	0.377342
1980:4	0.343832	3.100059	5.538583	6.514806	3.465702
1981:1	0.340295	1.028700	4.096868	6.510308	7.476488
1981:2	0.322721	5.164343	6.139917	9.049635	11.33844
1981:3	0.336861	4.381494	1.009124	2.027444	5.064650
1981:4	0.336440	0.124977	4.251040	1.132841	2.149887
1982:1	0.323667	3.796516	3.916749	0.293132	4.886349
1982:2	0.340772	5.284753	1.287600	1.161013	5.593376
1982:3	0.334068	1.967298	3.213488	0.705029	0.829125
1982:4	0.336253	0.654058	1.326107	3.888564	0.055582
1983:1	0.346747	3.120864	3.795335	1.753372	7.130786
1983:2	0.344713	0.586595	2.515963	3.186477	1.156492
1983:3	0.352211	2.175143	1.575789	4.745831	5.430930
1983:4	0.355687	0.986908	3.183518	2.578249	5.779577
1984:1	0.362249	1.844880	2.849996	5.087130	4.470695
1984:2	0.374303	3.327545	5.233815	6.272377	8.583952
1984:3	0.379630	1.423179	4.798081	6.731480	7.784822
1984:4	0.389815	2.682875	4.144236	7.609683	9.594953
1985:1	0.387812	0.513833	2.155256	3.609108	7.056748
1985:2	0.379139	2.236393	2.738735	0.129336	1.292001
1985:3	0.396454	4.566927	2.228399	1.703116	4.431683
1985:4	0.405593	2.305185	6.977388	4.584954	4.047561
1986:1	0.438480	8.108375	10.60047	15.65152	13.06509
1986:2	0.465926	6.259350	14.87526	17.52334	22.89055
1986:3	0.480794	3.191065	9.650155	18.54100	21.27359
1986:4	0.497343	3.442015	6.742916	13.42433	22.62120
1987:1	0.509195	2.383064	5.907104	9.286668	16.12730
1987:2	0.532879	4.651263	7.145169	10.83312	14.36988
1987:3	0.550178	3.246328	8.048586	10.62345	14.43113
1987:4	0.575210	4.549800	7.943830	12.96458	15.65660
1988:1	0.570315	0.850994	3.660088	7.025235	12.00326
1988:2	0.563907	1.123590	1.965021	2.495374	5.822710

1988:3	0.543799	3.565836	4.649360	5.460788	1.159443
1988:4	0.522339	3.946311	7.371428	8.412193	9.191600
1989:1	0.531864	1.823528	2.194745	5.682320	6.742064
1989:2	0.520617	2.114638	0.329671	4.262972	7.676798
1989:3	0.518714	0.365528	2.472437	0.693994	4.612918
1989:4	0.517807	0.174856	0.539744	2.642969	0.867636
1990:1	0.485487	6.241708	6.405649	6.747763	8.719710
1990:2	0.477664	1.611372	7.752502	7.913802	8.250403
1990:3	0.471099	1.374397	2.963622	9.020349	9.179432
1990:4	0.476279	1.099557	0.289953	1.896652	8.019977
1991:1	0.511361	7.365851	8.546399	7.054540	5.329494
1991:2	0.546589	6.889067	14.76236	16.02423	14.42960
1991:3	0.557858	2.061695	9.092794	17.12841	18.41630
1991:4	0.553553	0.771702	1.274083	8.250923	16.22452
1992:1	0.542620	1.975059	2.731519	0.726140	6.112903
1992:2	0.528077	2.680144	4.602269	5.338455	3.386823
1992:3	0.511267	3.183248	5.778077	7.639016	8.351767
1992:4	0.500370	2.131372	5.246773	7.786296	9.607571
1993:1	0.500480	0.021984	2.109856	5.225942	7.766024
1993:2	0.498619	0.371843	0.349941	2.473854	5.578353
1993:3	0.509506	2.183431	1.803469	1.825849	0.344438
1993:4	0.517128	1.495959	3.712053	3.326407	3.349122
1994:1	0.531307	2.741874	4.278850	6.555707	6.159487
1994:2	0.546886	2.932203	5.754475	7.336518	9.680137
1994:3	0.563543	3.045790	6.067302	8.975534	10.60576
1994:4	0.567037	0.620006	3.684680	6.724926	9.651189
1995:1	0.561241	1.022156	0.408487	2.624861	5.634031
1995:2	0.555990	0.935605	1.948197	1.340270	1.664698
1995:3	0.550406	1.004335	1.930543	2.932966	2.331144
1995:4	0.532926	3.175837	4.148276	5.045070	6.015657
1996:1	0.525560	1.382181	4.514122	5.473120	6.357518
1996:2	0.508238	3.295913	4.632538	7.661254	8.588644
1996:3	NA	NA	NA	NA	NA
1996:4	NA	NA	NA	NA	NA

Table A7: Percentage change in Irregular Term (ε) for Quarter1 (PCEQ1), Quarter 2 (PCEQ2), Quarter 3 (PCEQ3) and Quarter 4 (PCEQ4

Obs	ε_t	PCEQ1	PCEQ2	PCEQ3	PCEQ4
1960:1	NA	NA	NA	NA	NA
1960:2	NA	NA	NA	NA	NA
1960:3	0.971816	NA	NA	NA	NA
1960:4	1.058322	8.901479	NA	NA	NA
1961:1	1.047537	1.019066	7.791701	NA	NA
1961:2	0.920694	12.10869	13.00436	5.260461	NA
1961:3	0.971691	5.538974	7.240413	8.185694	0.012863
1961:4	1.048324	7.886561	13.86237	0.075129	0.944703
1962:1	1.054815	0.619179	8.554571	14.56738	0.694773
1962:2	1.027661	2.574290	1.971051	5.760062	11.61808
1962:3	0.940542	8.477406	10.83346	10.28136	3.205649
1962:4	1.110721	18.09372	8.082432	5.300076	5.952072
1963:1	0.940051	15.36569	0.052204	8.525185	10.88001
1963:2	0.952650	1.340246	14.23139	1.287343	7.299197
1963:3	0.987798	3.689498	5.079193	11.06696	5.024337
1963:4	1.043882	5.677679	9.576655	11.04525	6.017623
1964:1	1.089233	4.344457	10.26880	14.33716	15.86956
1964:2	0.982862	9.765679	5.845488	0.499697	3.171364
1964:3	1.014651	3.234330	6.847203	2.800221	2.718471
1964:4	0.957132	5.668846	2.617865	12.12789	8.310326
1965:1	1.029918	7.604594	1.504655	4.787651	5.445575
1965:2	1.007811	2.146482	5.294881	0.674123	2.538403
1965:3	1.003408	0.436887	2.573991	4.834861	1.108066
1965:4	1.011627	0.819108	0.378642	1.775967	5.693572
1966:1	1.116109	10.32812	11.23182	10.74586	8.368725
1966:2	0.945778	15.26114	6.509217	5.743426	6.155222
1966:3	0.974848	3.073660	12.65656	3.635629	2.846300
1966:4	1.024831	5.127261	8.358515	8.178233	1.305224
1967:1	0.978600	4.511085	0.384881	3.470370	12.32039
1967:2	1.007525	2.955753	1.688669	3.352010	6.528699
1967:3	0.971057	3.619563	0.770795	5.247109	0.388881
1967:4	0.962191	0.913026	4.499541	1.676783	6.112227
1968:1	1.052885	9.425779	8.426694	4.502122	7.590946
1968:2	0.971458	7.733703	0.963114	0.041295	3.579762
1968:3	1.023377	5.344441	2.802585	6.359029	5.387943
1968:4	1.040204	1.644262	7.076580	1.204405	8.107850
1969:1	1.055584	1.478556	3.147130	8.659767	0.256343
1969:2	0.954956	9.532922	8.195316	6.685806	1.698684
1969:3	0.963964	0.943290	8.679556	7.329332	5.805583
1969:4	0.962865	0.114008	0.828206	8.783669	7.434984
1970:1	1.022898	6.234830	6.113714	7.114673	3.096485
1970:2	0.959904	6.158385	0.307520	0.421178	0.518139
1970:3	0.974598	1.530778	4.721878	1.218551	1.103153
1970:4	1.014724	4.117185	5.710988	0.799102	5.385906
1971:1	1.060999	4.560353	8.865296	10.53178	3.724809
1971:2	0.987921	6.887660	2.641408	1.367025	2.918729
1971:3	0.950215	3.816702	10.44148	6.357295	2.501852
1971:4	1.004001	5.660403	1.627661	5.372107	1.056741
1972:1	1.089106	8.476585	14.61680	10.24222	2.649107
1972:2	1.007172	7.523051	0.315836	5.994117	1.948638
1972:3	0.854213	15.18698	21.56751	14.91911	10.10319
1972:4	1.063882	24.54528	5.630617	2.316028	5.964237
1973:1	1.081021	1.610987	26.55169	7.332313	0.742352

1973:2	0.948888	12.22298	10.80891	11.08330	5.786896
1973:3	1.009062	6.341528	6.656577	5.152827	18.12768
1973:4	0.943914	6.456293	0.524193	12.68310	11.27644
1974:1	1.084335	14.87646	7.459700	14.27429	0.306562
1974:2	0.990132	8.687629	4.896421	1.876000	4.346561
1974:3	0.935092	5.558855	13.76355	0.934619	7.330570
1974:4	0.990133	5.886159	0.000101	8.687537	4.896527
1975:1	1.084762	9.557201	16.00591	9.557312	0.039379
1975:2	0.929500	14.31300	6.123723	0.598016	6.123628
1975:3	1.003249	7.934266	7.514367	1.324671	7.288802
1975:4	0.969047	3.409124	4.254653	10.66732	2.129613
1976:1	1.067349	10.14419	6.389241	14.83045	1.605237
1976:2	0.957130	10.32643	1.229765	4.596964	2.972566
1976:3	1.070761	11.87205	0.319671	10.49629	6.729336
1976:4	0.959981	10.34591	0.297870	10.05932	0.935558
1977:1	0.953417	0.683764	10.95893	0.387931	10.67430
1977:2	1.049135	10.03947	9.287059	2.019685	9.612592
1977:3	1.032962	1.541556	8.343149	7.602338	3.530106
1977:4	0.960780	6.987866	8.421700	0.772275	0.083231
1978:1	1.045982	8.868003	1.260453	0.300533	9.708763
1978:2	1.015909	2.875097	5.737942	1.650884	3.166990
1978:3	0.910588	10.36717	12.94420	5.224089	11.84690
1978:4	1.004387	10.30093	1.134157	3.976646	4.538708
1979:1	1.071347	6.666753	17.65442	5.456985	2.424994
1979:2	0.966042	9.829215	3.817752	6.089911	4.908609
1979:3	1.065420	10.28713	0.553229	6.076642	17.00352
1979:4	0.970823	8.878846	0.494906	9.382954	3.341740
1980:1	0.967766	0.314887	9.165775	0.178460	9.668296
1980:2	1.050828	8.582860	8.240946	1.369601	8.776637
1980:3	1.027117	2.256411	6.132784	5.798585	3.595108
1980:4	0.899591	12.41592	14.39217	7.044575	7.337280
1981:1	0.900348	0.084149	12.34222	14.32014	6.966353
1981:2	1.145645	27.24469	27.35176	11.53987	9.023075
1981:3	0.875697	23.56297	2.737941	2.656096	14.74223
1981:4	1.086693	24.09464	5.145748	20.69700	20.79856
1982:1	0.940739	13.43102	7.427455	17.88565	4.486154
1982:2	0.949634	0.945533	12.61249	8.443217	17.10923
1982:3	1.085411	14.29782	15.37855	0.117973	23.94824
1982:4	1.007918	7.139508	6.137522	7.141088	7.249057
1983:1	0.906503	10.06183	16.48297	4.541855	3.639267
1983:2	1.048698	15.68610	4.045964	3.382405	10.43181
1983:3	1.006669	4.007731	11.04972	0.123919	7.254579
1983:4	1.036786	2.991748	1.135885	14.37204	2.864122
1984:1	0.910941	12.13799	9.509382	13.13600	0.489574
1984:2	1.029091	12.97010	0.742198	2.227346	1.869652
1984:3	1.059470	2.952023	16.30501	2.187915	5.245120
1984:4	1.000424	5.573164	2.785662	9.823139	3.507185
1985:1	0.969217	3.119377	8.518693	5.818144	6.397341
1985:2	0.996883	2.854469	0.353950	5.907388	3.129752
1985:3	0.928036	6.906227	4.248894	7.235732	12.40564
1985:4	1.131486	21.92264	13.50239	16.74228	13.10065
1986:1	0.951119	15.94072	2.487296	4.590709	1.867280
1986:2	1.066037	12.08240	5.784340	14.87022	6.937023
1986:3	0.990894	7.048817	4.181916	12.42543	6.773229
1986:4	1.041785	5.135867	2.274968	9.532561	7.927716
1987:1	0.965439	7.328383	2.568892	9.436633	1.505595
1987:2	1.012401	4.864316	2.820544	2.170464	5.031345
1987:3	1.036088	2.339686	7.317811	0.546850	4.560932
1987:4	1.020506	1.503926	0.800572	5.703830	2.042552
1988:1	1.059698	3.840448	2.278764	4.671765	9.763330

1988:2	0.925355	12.67748	9.323904	10.68761	8.597976
1988:3	1.001667	8.246781	5.476183	1.846045	3.322208
1988:4	0.970522	3.109317	4.881046	8.415228	4.897962
1989:1	0.954539	1.646846	4.704957	3.153817	9.923488
1989:2	1.068357	11.92387	10.08066	6.657901	15.45374
1989:3	0.964397	9.730830	1.032750	0.631104	3.720797
1989:4	0.964381	0.001659	9.732327	1.031074	0.632752
1990:1	1.037309	7.562156	7.560372	2.906145	8.671201
1990:2	0.920132	11.29625	4.588332	4.589915	13.87411
1990:3	0.996233	8.270661	3.959862	3.302844	3.301130
1990:4	0.993582	0.266102	7.982550	4.215427	3.027953
1991:1	1.030458	3.711420	3.435441	11.99024	0.660459
1991:2	1.035834	0.521710	4.252492	3.975074	12.57450
1991:3	1.090918	5.317841	5.867294	9.796474	9.504303
1991:4	0.935938	14.20638	9.644016	9.172620	5.801635
1992:1	0.935357	0.062077	14.25964	9.700106	9.229003
1992:2	0.997398	6.632869	6.566674	8.572597	3.710633
1992:3	1.077893	8.070499	15.23867	15.16714	1.193949
1992:4	0.901643	16.35134	9.600480	3.604399	3.664238
1993:1	0.916032	1.595864	15.01643	8.157827	2.066056
1993:2	1.057121	15.40219	17.24385	1.927093	5.987880
1993:3	1.067184	0.951925	16.50073	18.35993	0.993512
1993:4	0.956247	10.39530	9.542332	4.390130	6.056055
1994:1	0.927509	3.005290	13.08818	12.26085	1.252904
1994:2	1.057427	14.00720	10.58095	0.914275	0.028947
1994:3	1.074135	1.580062	15.80858	12.32820	0.651340
1994:4	0.989043	7.921909	6.467019	6.634329	3.429658
1995:1	0.906087	8.387502	15.64496	14.31210	2.309627
1995:2	1.002477	10.63805	1.358283	6.671228	5.196576
1995:3	1.062059	5.943478	17.21380	7.382490	1.124253
1995:4	1.010629	4.842481	0.813186	11.53774	2.182514
1996:1	0.817767	19.08336	23.00174	18.42536	9.747408
1996:2	1.044342	27.70655	3.335843	1.668175	4.176156

Table A8: Descriptive Statistics for Average Absolute Percentage Change in Trend-Cycle

	PCTCQ1	PCTCQ2	PCTCQ3	PCTCQ4
Mean	2.223287	3.876892	5.344749	6.847186
Median	1.844880	3.174792	4.262972	5.785690
Maximum	8.108375	14.87526	18.54100	22.89055
Minimum	0.000000	0.182767	0.102903	0.055582
Std. Dev	1.771506	3.001829	4.223093	5.082102
Observations	143	142	141	140

Table A9: Descriptive Statistics for Average Absolute Percentage Change in Irregular Term

	PCEQ1	PCEQ2	PCEQ3	PCEQ4
Mean	7.591553	7.379297	6.663688	5.716074
Median	6.887660	6.488118	5.907388	4.903285
Maximum	27.70655	27.35176	20.69700	23.94824
Minimum	0.001659	0.000101	0.041295	0.012863
Std. Dev	5.813602	5.634835	4.788398	4.553062
Observations	143	142	141	140

Table A10: Standard deviation and Mean ($\bar{Z}_h$,S_h) for all the subseries.

obs	SD	MEAN	LSD	LMEAN
1960	0.009163	0.189020	-4.692564	-1.665902
1961	0.012332	0.189750	-4.395558	-1.662048
1962	0.025680	0.225460	-3.662054	-1.489613
1963	0.027319	0.221994	-3.600173	-1.505103
1964	0.018504	0.259474	-3.989785	-1.349099
1965	0.028949	0.285191	-3.542206	-1.254596
1966	0.009507	0.311209	-4.655714	-1.167292
1967	0.029326	0.292647	-3.529280	-1.228788
1968	0.030229	0.319019	-3.498957	-1.142505
1969	0.022501	0.314244	-3.794206	-1.157584
1970	0.017202	0.287944	-4.062737	-1.244989
1971	0.020644	0.300497	-3.880346	-1.202318
1972	0.032106	0.305777	-3.438700	-1.184901
1973	0.019168	0.306998	-3.954539	-1.180915
1974	0.019294	0.303386	-3.947944	-1.192750
1975	0.010436	0.290538	-4.562471	-1.236023
1976	0.021500	0.306713	-3.839699	-1.181843
1977	0.042656	0.324419	-3.154577	-1.125720
1978	0.028742	0.328681	-3.549387	-1.112667
1979	0.031132	0.356176	-3.469520	-1.032330
1980	0.052901	0.354832	-2.939337	-1.036112
1981	0.062957	0.336861	-2.765304	-1.088086
1982	0.043881	0.334068	-3.126263	-1.096411
1983	0.051812	0.352211	-2.960124	-1.043524
1984	0.059499	0.379630	-2.821790	-0.968560
1985	0.055332	0.396454	-2.894412	-0.925197
1986	0.078770	0.480795	-2.541217	-0.732314
1987	0.076271	0.550178	-2.573467	-0.597514
1988	0.028728	0.543799	-3.549892	-0.609175
1989	0.069684	0.518714	-2.663782	-0.656403
1990	0.016900	0.471099	-4.080464	-0.752686
1991	0.076748	0.557858	-2.567227	-0.583650
1992	0.069319	0.511266	-2.669035	-0.670864
1993	0.077149	0.509506	-2.562014	-0.674314
1994	0.089854	0.563543	-2.409573	-0.573512
1995	0.073154	0.550406	-2.615193	-0.597099
1996	0.096404	0.475610	-2.339208	-0.743157

Table A11: Output of LSD on LMEAN

LS // Dependent Variable is LSD
Sample: 1960 1996
Included observations: 37

Variable	Coefficient	Std. Error	T-Statistic	Prob.
LMEAN	1.665762	0.247648	6.726318	0.0000
C	-1.645706	0.269242	-6.112374	0.0000

R-squared	0.563827	Mean dependent var	-3.386452
Adjusted R-squared	0.551365	S.D. dependent var	0.674447
S.E. of regression	0.451746	Akaike info criterion	-1.536731
Sum squared resid	7.142617	Schwartz criterion	-1.449654
Log likelihood	-22.07121	F-statistic	45.24335
Durbin-Watson stat	1.609343	Prob(F-statistic)	0.000000

Table A12: Log Transformed $(LY_t)^d$ Yield Series

	Q1	Q2	Q3	Q4
1960:1	-1.723548	-1.652043	-1.682654	-1.608893
1961:1	-1.741673	-1.648501	-1.678917	-1.585389
1962:1	-1.638115	-1.409690	-1.539068	-1.391516
1963:1	-1.692613	-1.449775	-1.505767	-1.397278
1964:1	-1.429486	-1.266902	-1.322715	-1.384891
1965:1	-1.414640	-1.193462	-1.239355	-1.187411
1966:1	-1.194808	-1.124924	-1.180927	-1.169887
1967:1	-1.332113	-1.097789	-1.246320	-1.253513
1968:1	-1.291755	-1.115162	-1.107560	-1.069844
1969:1	-1.165073	-1.062002	-1.182449	-1.228306
1970:1	-1.325436	-1.187142	-1.258883	-1.213932
1971:1	-1.275011	-1.120876	-1.241547	-1.178864
1972:1	-1.212492	-1.089603	-1.330655	-1.124013
1973:1	-1.235697	-1.104954	-1.160055	-1.228730
1974:1	-1.213380	-1.104556	-1.248022	-1.210924
1975:1	-1.266856	-1.193290	-1.220939	-1.264930
1976:1	-1.275297	-1.131764	-1.101636	-1.228563
1977:1	-1.322058	-0.999705	-1.081451	-1.127018
1978:1	-1.165881	-1.001105	-1.194495	-1.100373
1979:1	-1.151861	-0.974739	-0.957123	-1.057365
1980:1	-1.151868	-0.858590	-0.997517	-1.168841
1981:1	-1.301784	-0.892545	-1.208982	-1.001620
1982:1	-1.307997	-1.025765	-1.002614	-1.077428
1983:1	-1.276189	-0.915039	-1.025040	-0.993002
1984:1	-1.227569	-0.851559	-0.898952	-0.937083
1985:1	-1.097369	-0.870519	-0.988042	-0.774297
1986:1	-0.993426	-0.597326	-0.729627	-0.652963
1987:1	-0.828965	-0.514681	-0.550223	-0.528145
1988:1	-0.622450	-0.547989	-0.595672	-0.674783
1989:1	-0.796763	-0.484164	-0.680818	-0.689845
1990:1	-0.804841	-0.719631	-0.744624	-0.743613
1991:1	-0.759543	-0.466397	-0.484794	-0.653027
1992:1	-0.797042	-0.538663	-0.584018	-0.791367
1993:1	-0.898760	-0.537909	-0.597453	-0.699628
1994:1	-0.826535	-0.445222	-0.490159	-0.573771
1995:1	-0.795094	-0.482076	-0.525051	-0.614223
1996:1	-0.963335	-0.530964	-0.649640	-0.890258
1997:1	-0.836944	-0.654515	-0.629887	-0.662399

[d] $LY_t = \text{Log}(Y_t)$

Table A13: Inverse Square Root Transformed ($Y1_t$)[e] Yield Series

	Q1	Q2	Q3	Q4
1960:1	2.367356	2.284213	2.319443	2.235459
1961:1	2.388908	2.280171	2.315113	2.209342
1962:1	2.268361	2.023533	2.158760	2.005228
1963:1	2.331021	2.064499	2.123114	2.011014
1964:1	2.043661	1.884101	1.937421	1.998597
1965:1	2.028548	1.816172	1.858328	1.810685
1966:1	1.817395	1.754988	1.804825	1.794890
1967:1	1.946546	1.731338	1.864812	1.871531
1968:1	1.907661	1.746443	1.739817	1.707315
1969:1	1.790574	1.700634	1.806199	1.848091
1970:1	1.940059	1.810442	1.876562	1.834856
1971:1	1.891756	1.751440	1.860366	1.802964
1972:1	1.833536	1.724266	1.945128	1.754189
1973:1	1.854933	1.737552	1.786087	1.848483
1974:1	1.834350	1.737206	1.866399	1.832098
1975:1	1.884058	1.816016	1.841296	1.882245
1976:1	1.892027	1.761000	1.734671	1.848328
1977:1	1.936785	1.648478	1.717253	1.756826
1978:1	1.791298	1.649633	1.817110	1.733576
1979:1	1.778785	1.628028	1.613751	1.696695
1980:1	1.778791	1.536174	1.646676	1.793951
1981:1	1.917250	1.562477	1.830320	1.650057
1982:1	1.923216	1.670099	1.650878	1.713802
1983:1	1.892870	1.580150	1.669493	1.642962
1984:1	1.847410	1.530783	1.567491	1.597662
1985:1	1.730974	1.545364	1.638893	1.472775
1986:1	1.643310	1.348055	1.440245	1.386083
1987:1	1.513587	1.293486	1.316678	1.302222
1988:1	1.365096	1.315208	1.346941	1.401287
1989:1	1.489412	1.273899	1.405522	1.411880
1990:1	1.495440	1.433065	1.451085	1.450353
1991:1	1.461951	1.262632	1.274300	1.386127
1992:1	1.489620	1.309089	1.339115	1.485399
1993:1	1.567340	1.308596	1.348141	1.418804
1994:1	1.511749	1.249335	1.277723	1.332271
1995:1	1.488169	1.272570	1.300210	1.359493
1996:1	1.618772	1.304059	1.383781	1.560691
1997:1	1.519638	1.387159	1.370182	1.392637

[e] $Y1_t = 1/\sqrt{Y_t}$

Table A14: Inverse Transformed $(Y2_t)^r$ Yield Series

	Q1	Q2	Q3	Q4
1960:1	5.604376	5.217627	5.379815	4.997276
1961:1	5.706883	5.199181	5.359746	4.881192
1962:1	5.145462	4.094686	4.660245	4.020941
1963:1	5.433660	4.262157	4.507611	4.044179
1964:1	4.176551	3.549838	3.753599	3.994392
1965:1	4.115006	3.298479	3.453384	3.278581
1966:1	3.302924	3.079984	3.257393	3.221629
1967:1	3.789041	2.997530	3.477523	3.502627
1968:1	3.639169	3.050064	3.026964	2.914925
1969:1	3.206156	2.892154	3.262355	3.415441
1970:1	3.763827	3.277700	3.521486	3.366697
1971:1	3.578739	3.067541	3.460962	3.250679
1972:1	3.361853	2.973094	3.783522	3.077179
1973:1	3.440777	3.019087	3.190108	3.416888
1974:1	3.364839	3.017884	3.483447	3.356583
1975:1	3.549674	3.297914	3.390371	3.542845
1976:1	3.579764	3.101121	3.009084	3.416316
1977:1	3.751135	2.717480	2.948957	3.086439
1978:1	3.208748	2.721288	3.301888	3.005286
1979:1	3.164076	2.650474	2.604194	2.878775
1980:1	3.164096	2.359832	2.711541	3.218259
1981:1	3.675849	2.441335	3.350073	2.722689
1982:1	3.698758	2.789229	2.725397	2.937116
1983:1	3.582958	2.496873	2.787208	2.699325
1984:1	3.412923	2.343298	2.457027	2.552525
1985:1	2.996273	2.388151	2.685970	2.169066
1986:1	2.700469	1.817253	2.074306	1.921226
1987:1	2.290945	1.673105	1.733640	1.695783
1988:1	1.863488	1.729772	1.814250	1.963607
1989:1	2.218348	1.622818	1.975492	1.993406
1990:1	2.236341	2.053675	2.105649	2.103523
1991:1	2.137300	1.594240	1.623841	1.921348
1992:1	2.218968	1.713714	1.793230	2.206410
1993:1	2.456556	1.712423	1.817485	2.013004
1994:1	2.285385	1.560837	1.632576	1.774947
1995:1	2.214648	1.619433	1.690546	1.848220
1996:1	2.620421	1.700570	1.914850	2.435757
1997:1	2.309298	1.924209	1.877398	1.939439

[r] $Y2_t = 1/Y_t$

APPENDIX B

EViews Outputs
Correlograms
Forecast Series

Table B1: Output of HWMS on Y_t

Sample: 1960:1 1996:4
Included observations: 148
Method: Holt-Winters Multiplicative Seasonal
Original Series: Y
Forecast Series: YSM

Parameters:	Alpha	0.4600	
	Beta	0.0000	
	Gamma	0.3901	
Sum of Squared Residuals		0.158216	
Root Mean Squared Error		0.032696	
End of Period Levels:	Mean	0.470802	
	Trend	0.001990	
	Seasonals:	1996:1	0.817888
		1996:2	1.163295
		1996:3	1.072399
		1996:4	0.946418

Table B2: Output of HWAS on LY_t

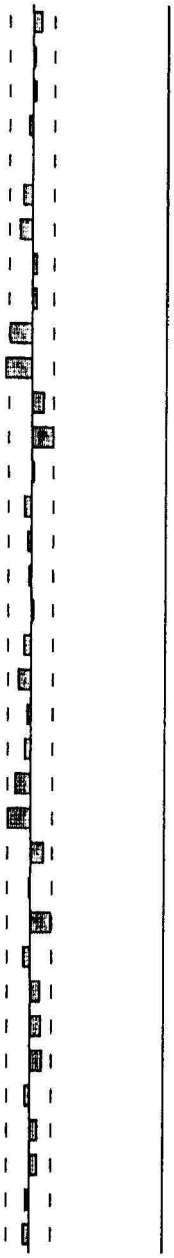
Sample: 1960:1 1996:4
Included observations: 148
Method: Holt-Winters Additive Seasonal
Original Series: LY
Forecast Series: LYSM

Parameters:	Alpha	0.4500	
	Beta	0.0000	
	Gamma	0.3701	
Sum of Squared Residuals		1.019814	
Root Mean Squared Error		0.083010	
End of Period Levels:	Mean	-0.759284	
	Trend	0.006307	
	Seasonals:	1996:1	-0.190787
		1996:2	0.159035
		1996:3	0.077340
		1996:4	-0.045587

Exhibit B1: Autocorrelation Plot of Residuals from HWMS on Y_t

Correlogram of RES

Date: 05/07/00 Time: 09:23
Sample: 1960:1 1996:4
Included observations: 148

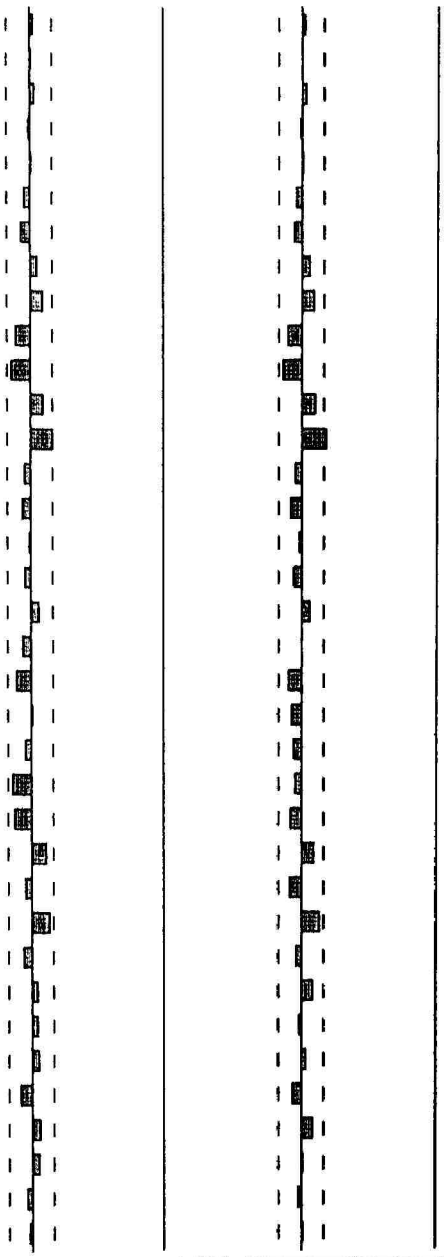


		AC	PAC	Q-Stat	Prob
1		0.066	0.066	0.6502	0.420
2		0.017	0.013	0.6953	0.706
3		0.025	0.023	0.7919	0.851
4		-0.019	-0.022	0.8465	0.932
5		0.005	0.007	0.8505	0.974
6		-0.060	-0.061	1.4137	0.965
7		-0.090	-0.082	2.6924	0.912
8		0.037	0.050	2.9100	0.940
9		0.041	0.042	3.1781	0.957
10		-0.163	-0.171	7.4769	0.680
11		-0.195	-0.188	13.626	0.254
12		0.091	0.127	14.965	0.243
13		0.165	0.182	19.439	0.110
14		0.017	-0.016	19.486	0.147
15		-0.045	-0.081	19.818	0.179
16		-0.019	-0.030	19.880	0.226
17		-0.013	-0.043	19.907	0.279
18		0.021	0.025	19.982	0.334
19		-0.043	0.031	20.294	0.377
20		-0.083	-0.085	21.497	0.368
21		-0.022	-0.137	21.582	0.424
22		-0.036	-0.058	21.810	0.471
23		-0.111	0.015	23.993	0.404
24		-0.165	-0.102	28.893	0.224
25		0.103	0.082	30.806	0.196
26		-0.001	-0.069	30.806	0.236
27		0.163	0.145	35.673	0.123
28		-0.042	-0.074	36.006	0.142
29		0.076	0.121	37.085	0.144
30		0.087	0.036	38.517	0.137
31		0.096	0.050	40.266	0.123
32		-0.026	-0.069	40.395	0.147
33		0.059	0.095	41.058	0.158
34		0.061	0.035	41.785	0.169
35		-0.020	-0.043	41.861	0.198
36		-0.038	0.017	42.146	0.222

Exhibit B2: Autocorrelation Plot of Residuals from HWAS on LY_t

Correlogram of RES

Date: 05/07/00 Time: 09:30
Sample: 1960:1 1996:4
Included observations: 148

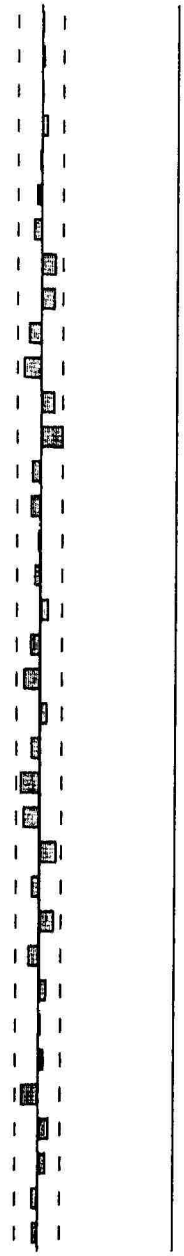


	AC	PAC	Q-Stat	Prob
1	0.026	0.026	0.1046	0.746
2	0.008	0.008	0.1153	0.944
3	0.041	0.040	0.3672	0.947
4	-0.005	-0.007	0.3704	0.985
5	0.015	0.014	0.4032	0.995
6	-0.033	-0.035	0.5729	0.997
7	-0.058	-0.056	1.1054	0.993
8	0.056	0.059	1.6103	0.991
9	0.093	0.095	2.9902	0.965
10	-0.101	-0.105	4.6360	0.914
11	-0.134	-0.139	7.5392	0.754
12	0.095	0.103	9.0075	0.702
13	0.168	0.185	13.650	0.399
14	-0.037	-0.048	13.871	0.459
15	-0.054	-0.074	14.355	0.499
16	-0.008	-0.009	14.365	0.572
17	-0.038	-0.053	14.606	0.624
18	0.062	0.065	15.263	0.644
19	-0.053	0.006	15.745	0.674
20	-0.100	-0.092	17.463	0.623
21	0.016	-0.072	17.507	0.680
22	-0.040	-0.057	17.783	0.719
23	-0.135	-0.049	21.008	0.581
24	-0.116	-0.075	23.408	0.496
25	0.107	0.091	25.490	0.435
26	-0.040	-0.083	25.777	0.475
27	0.135	0.136	29.125	0.355
28	-0.053	-0.039	29.652	0.380
29	0.047	0.088	30.059	0.411
30	0.042	-0.009	30.383	0.446
31	0.050	0.033	30.860	0.473
32	-0.077	-0.060	32.002	0.467
33	0.057	0.088	32.638	0.485
34	0.055	0.014	33.223	0.506
35	-0.032	-0.018	33.430	0.544
36	-0.010	0.012	33.452	0.590

Exhibit B3: Autocorrelation Plot of Residuals from HWAS on $Y1_t$

Correlogram of RES

Date: 05/07/00 Time: 09:44
Sample: 1960:1 1996:4
Included observations: 148

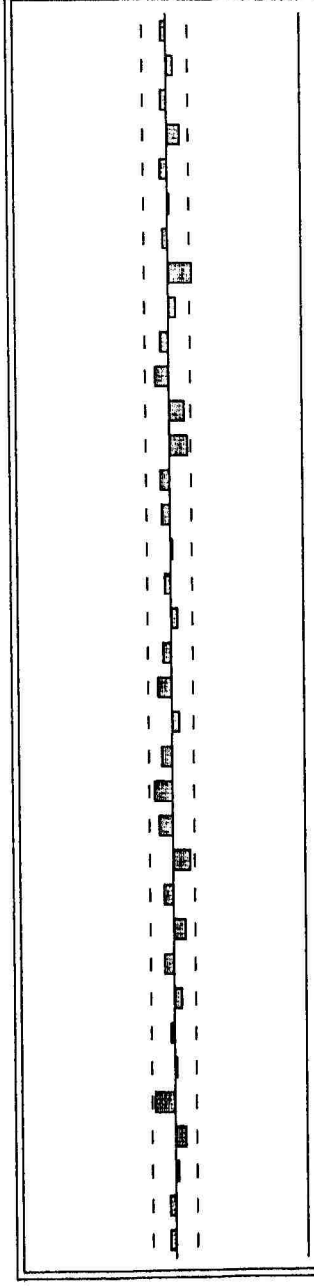


Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.016	0.016	0.0376	0.846
		2	0.023	0.022	0.1148	0.944
		3	0.012	0.012	0.1383	0.987
		4	0.049	0.048	0.5012	0.973
		5	-0.001	-0.003	0.5012	0.992
		6	-0.019	-0.021	0.5573	0.997
		7	-0.045	-0.046	0.8785	0.997
		8	0.115	0.115	2.9612	0.937
		9	0.099	0.100	4.5198	0.874
		10	-0.081	-0.088	5.5759	0.850
		11	-0.116	-0.122	7.7538	0.735
		12	0.103	0.103	9.4969	0.660
		13	0.169	0.181	14.211	0.359
		14	-0.056	-0.061	14.736	0.396
		15	-0.062	-0.074	15.381	0.424
		16	-0.002	-0.016	15.382	0.497
		17	-0.027	-0.057	15.503	0.559
		18	0.062	0.085	16.157	0.582
		19	-0.064	0.002	16.852	0.600
		20	-0.107	-0.127	18.833	0.533
		21	0.052	-0.037	19.306	0.566
		22	-0.053	-0.063	19.792	0.596
		23	-0.138	-0.052	23.160	0.451
		24	-0.113	-0.074	25.457	0.381
		25	0.128	0.109	28.410	0.289
		26	-0.048	-0.090	28.832	0.319
		27	0.112	0.125	31.134	0.266
		28	-0.066	-0.014	31.951	0.276
		29	0.056	0.073	32.543	0.297
		30	0.015	-0.012	32.584	0.341
		31	0.033	0.012	32.795	0.379
		32	-0.122	-0.060	35.655	0.300
		33	0.074	0.084	36.708	0.301
		34	0.053	0.020	37.247	0.322
		35	-0.036	-0.032	37.502	0.355
		36	-0.027	0.009	37.650	0.394

Exhibit B4: Autocorrelation Plot of Residuals from HWAS on $Y2_t$

Correlogram of RES

Date: 05/07/00 Time: 09:52
Sample: 1960:1 1996:4
Included observations: 148



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.027	-0.027	0.1096	0.741
		2	0.055	0.054	0.5697	0.752
		3	-0.037	-0.034	0.7754	0.855
		4	0.101	0.097	2.3446	0.673
		5	-0.048	-0.041	2.7061	0.745
		6	0.018	0.006	2.7591	0.838
		7	-0.027	-0.016	2.8755	0.896
		8	0.185	0.173	8.3017	0.405
		9	0.061	0.081	8.8961	0.447
		10	-0.052	-0.075	9.3341	0.501
		11	-0.096	-0.096	10.812	0.459
		12	0.117	0.095	13.033	0.367
		13	0.141	0.171	16.301	0.233
		14	-0.059	-0.061	16.883	0.262
		15	-0.051	-0.068	17.318	0.300
		16	0.019	-0.026	17.380	0.361
		17	-0.035	-0.068	17.592	0.415
		18	0.057	0.104	18.140	0.446
		19	-0.053	0.004	18.626	0.481
		20	-0.092	-0.159	20.080	0.453
		21	0.063	-0.020	20.779	0.473
		22	-0.069	-0.062	21.627	0.482
		23	-0.124	-0.053	24.376	0.383
		24	-0.093	-0.065	25.918	0.357
		25	0.135	0.106	29.207	0.255
		26	-0.058	-0.085	29.829	0.275
		27	0.097	0.112	31.568	0.248
		28	-0.065	0.018	32.347	0.261
		29	0.062	0.045	33.075	0.275
		30	-0.023	0.007	33.178	0.315
		31	0.020	-0.009	33.254	0.358
		32	-0.143	-0.060	37.177	0.243
		33	0.090	0.065	38.740	0.227
		34	0.032	0.037	38.941	0.257
		35	-0.034	-0.047	39.170	0.288
		36	-0.038	0.008	39.459	0.318

Table B3: Output of HWAS on $Y1_t$

Sample: 1960:1 1996:4
Included observations: 148
Method: Holt-Winters Additive Seasonal
Original Series: $Y1_t$
Forecast Series: $Y1SM_t$

Parameters:	Alpha		0.4400
	Beta		0.0000
	Gamma		0.2300
Sum of Squared Residuals			0.734853
Root Mean Squared Error			0.070464
End of Period Levels:	Mean		1.464373
	Trend		-0.005797
	Seasonals:	1996:1	0.126292
		1996:2	-0.103794
		1996:3	-0.044820
		1996:4	0.022323

Table B4: Output of HWAS on $Y2_t$

Sample: 1960:1 1996:4
Included observations: 148
Method: Holt-Winters Additive Seasonal
Original Series: $Y2_t$
Forecast Series: $Y2SM_t$

Parameters:	Alpha		0.4700
	Beta		0.0000
	Gamma		0.0000
Sum of Squared Residuals			8.922125
Root Mean Squared Error			0.245529
End of Period Levels:	Mean		2.182978
	Trend		-0.021749
	Seasonals:	1996:1	0.334245
		1996:2	-0.280616
		1996:3	-0.025788
		1996:4	-0.027841

Table B5: Forecast Yield Series (FY_t) From 1960: Q1 to 1996: Q4 by HWMS Method

	Q1	Q2	Q3	Q4
1960:1	0.165180	0.214908	0.189187	0.187419
1961:1	0.176500	0.211958	0.191870	0.192491
1962:1	0.178866	0.219750	0.221325	0.225675
1963:1	0.210146	0.235076	0.218665	0.233781
1964:1	0.206627	0.270137	0.257005	0.279594
1965:1	0.231580	0.282227	0.271858	0.290298
1966:1	0.265109	0.337783	0.308209	0.317849
1967:1	0.288153	0.319658	0.305232	0.305738
1968:1	0.271132	0.323633	0.298299	0.321426
1969:1	0.302421	0.363612	0.331543	0.326062
1970:1	0.287775	0.323694	0.292458	0.292353
1971:1	0.273526	0.323501	0.303118	0.303332
1972:1	0.281666	0.337300	0.310783	0.299903
1973:1	0.290096	0.334912	0.297218	0.332164
1974:1	0.288651	0.336569	0.302122	0.309899
1975:1	0.289057	0.325624	0.283055	0.303678
1976:1	0.280729	0.316235	0.293288	0.319658
1977:1	0.294823	0.319819	0.321157	0.323453
1978:1	0.308641	0.369772	0.340042	0.313657
1979:1	0.310685	0.372240	0.337473	0.361414
1980:1	0.335751	0.387932	0.373089	0.360749
1981:1	0.322063	0.366578	0.349200	0.307881
1982:1	0.316668	0.384030	0.318106	0.344914
1983:1	0.303131	0.387013	0.351060	0.347658
1984:1	0.309575	0.409973	0.371816	0.383548
1985:1	0.325412	0.455835	0.394603	0.374528
1986:1	0.349001	0.485119	0.465480	0.486747
1987:1	0.405293	0.574921	0.518842	0.564657
1988:1	0.466318	0.677725	0.567777	0.572266
1989:1	0.459897	0.581778	0.552015	0.532614
1990:1	0.445404	0.579058	0.481116	0.482678
1991:1	0.420138	0.552565	0.544160	0.581782
1992:1	0.485565	0.589039	0.543455	0.527802
1993:1	0.446734	0.545233	0.525700	0.496288
1994:1	0.449361	0.584331	0.566885	0.538107
1995:1	0.490257	0.637341	0.581754	0.533110
1996:1	0.472867	0.587731	0.550096	0.488562

Table B6: Forecast Yield Series (FLY_t) From 1960: Q1 to 1996: Q4 by HWAS Method

	Q1	Q2	Q3	Q4
1960:1	-1.792701	-1.536980	-1.670561	-1.682537
1961:1	-1.747154	-1.557581	-1.659339	-1.657232
1962:1	-1.734050	-1.523395	-1.518553	-1.498260
1963:1	-1.571212	-1.454739	-1.526149	-1.461550
1964:1	-1.583379	-1.317306	-1.365130	-1.281683
1965:1	-1.469554	-1.269085	-1.307187	-1.241943
1966:1	-1.332215	-1.090410	-1.179658	-1.148216
1967:1	-1.247109	-1.140379	-1.188164	-1.186473
1968:1	-1.306075	-1.128680	-1.210054	-1.137881
1969:1	-1.198763	-1.012815	-1.104294	-1.120424
1970:1	-1.247110	-1.128436	-1.230095	-1.230061
1971:1	-1.297565	-1.129503	-1.194774	-1.193690
1972:1	-1.268051	-1.087972	-1.169135	-1.207149
1973:1	-1.241275	-1.095327	-1.212632	-1.104507
1974:1	-1.245121	-1.090495	-1.197134	-1.171553
1975:1	-1.242398	-1.122383	-1.262098	-1.192753
1976:1	-1.272587	-1.152240	-1.228024	-1.143395
1977:1	-1.224368	-1.142042	-1.141432	-1.129746
1978:1	-1.176177	-0.996403	-1.078722	-1.157776
1979:1	-1.169915	-0.989703	-1.085780	-1.019595
1980:1	-1.091561	-0.947239	-0.987018	-1.017326
1981:1	-1.131956	-1.006598	-1.055126	-1.178646
1982:1	-1.154307	-0.963906	-1.146123	-1.068484
1983:1	-1.192682	-0.952008	-1.047952	-1.055611
1984:1	-1.168892	-0.892523	-0.989531	-0.958660
1985:1	-1.117914	-0.785615	-0.929163	-0.979591
1986:1	-1.055754	-0.726117	-0.768208	-0.721010
1987:1	-0.899008	-0.552371	-0.653818	-0.571367
1988:1	-0.757931	-0.388433	-0.565224	-0.555379
1989:1	-0.774541	-0.536060	-0.591421	-0.626208
1990:1	-0.803068	-0.540299	-0.728468	-0.725055
1991:1	-0.864334	-0.589753	-0.608504	-0.542642
1992:1	-0.721404	-0.524235	-0.604915	-0.632966
1993:1	-0.802395	-0.602094	-0.640209	-0.694918
1994:1	-0.794440	-0.532539	-0.564607	-0.614716
1995:1	-0.707651	-0.446351	-0.536405	-0.621725
1996:1	-0.741851	-0.530342	-0.595018	-0.710810

Table B7: Forecast Yield Series ($FY1_t$) From 1960: Q1 to 1996: Q4 by HWAS Method

	Q1	Q2	Q3	Q4
1960:1	2.407836	2.203069	2.307116	2.311845
1961:1	2.369893	2.206971	2.298658	2.293774
1962:1	2.359038	2.154833	2.149233	2.128305
1963:1	2.187347	2.081020	2.144062	2.092643
1964:1	2.192688	1.936940	1.983433	1.913169
1965:1	2.084058	1.881847	1.923571	1.861779
1966:1	1.956862	1.716402	1.804055	1.773130
1967:1	1.883757	1.755223	1.810518	1.805847
1968:1	1.933445	1.754775	1.826985	1.761540
1969:1	1.835366	1.650581	1.738323	1.745339
1970:1	1.878131	1.752519	1.846020	1.841102
1971:1	1.921700	1.755150	1.818006	1.813549
1972:1	1.893887	1.717338	1.790810	1.828792
1973:1	1.873645	1.724084	1.819420	1.745349
1974:1	1.874371	1.719579	1.810716	1.793390
1975:1	1.875385	1.749444	1.867019	1.811689
1976:1	1.902279	1.775470	1.845498	1.765126
1977:1	1.856423	1.768940	1.779920	1.745733
1978:1	1.806204	1.650934	1.721788	1.766616
1979:1	1.799883	1.643641	1.720646	1.659966
1980:1	1.730395	1.605436	1.647077	1.651754
1981:1	1.762753	1.669320	1.703297	1.782409
1982:1	1.776727	1.646104	1.767774	1.706152
1983:1	1.797380	1.628539	1.700211	1.692550
1984:1	1.772952	1.576322	1.651525	1.617975
1985:1	1.728597	1.484795	1.601725	1.629711
1986:1	1.682544	1.427930	1.480052	1.449165
1987:1	1.563775	1.299106	1.389060	1.340842
1988:1	1.466099	1.184813	1.326012	1.323199
1989:1	1.482262	1.278371	1.346128	1.367603
1990:1	1.503361	1.291342	1.431650	1.433596
1991:1	1.548472	1.321147	1.357601	1.313999
1992:1	1.450439	1.282029	1.352941	1.359930
1993:1	1.504835	1.345126	1.382792	1.398563
1994:1	1.494414	1.302073	1.332850	1.346683
1995:1	1.430665	1.246971	1.311908	1.350094
1996:1	1.447835	1.309939	1.356221	1.414398

Table B8: Forecast Yield Series ($FY2_t$) From 1960: Q1 to 1996: Q4 by HWAS Method

	Q1	Q2	Q3	Q4
1960:1	5.666642	5.000768	5.335768	5.332668
1961:1	5.515373	4.968772	5.310140	5.309653
1962:1	5.448616	4.669526	4.632434	4.621703
1963:1	4.679686	4.397439	4.566935	4.515252
1964:1	4.634187	3.782492	3.906225	3.810690
1965:1	4.237365	3.543248	3.661287	3.539773
1966:1	3.757351	2.907164	3.221467	3.214550
1967:1	3.558213	3.030091	3.247866	3.332002
1968:1	3.752531	3.062642	3.289808	3.142472
1969:1	3.375863	2.659492	3.001920	3.100521
1970:1	3.588867	3.034488	3.381874	3.423689
1971:1	3.737240	3.026136	3.278674	3.340547
1972:1	3.638646	2.871946	3.152563	3.425307
1973:1	3.602026	2.889631	3.183552	3.162832
1974:1	3.622573	2.864830	3.169843	3.293433
1975:1	3.663449	2.973366	3.358979	3.349932
1976:1	3.780936	3.049777	3.306987	3.143173
1977:1	3.611885	3.040722	3.121879	3.016805
1978:1	3.389869	2.668134	2.926194	3.078966
1979:1	3.384673	2.644385	2.880325	2.726744
1980:1	3.138534	2.513938	2.674588	2.668154
1981:1	3.267036	2.822565	2.876468	3.075257
1982:1	3.249889	2.824245	3.040866	2.868796
1983:1	3.241243	2.765237	2.872186	2.808445
1984:1	3.097496	2.609135	2.717271	2.571157
1985:1	2.902736	2.310088	2.579855	2.605927
1986:1	2.740942	2.085310	2.192404	2.113097
1987:1	2.363255	1.692661	1.916548	1.806781
1988:1	2.094949	1.349555	1.761332	1.762402
1989:1	2.197303	1.570584	1.828212	1.873631
1990:1	2.270261	1.617709	2.055688	2.055368
1991:1	2.418337	1.649642	1.856682	1.723447
1992:1	2.156795	1.549406	1.859708	1.804662
1993:1	2.333817	1.754894	1.968011	1.873463
1994:1	2.279383	1.645594	1.838837	1.718094
1995:1	2.085151	1.509404	1.794195	1.721679
1996:1	2.121489	1.719374	1.943615	1.906294

Table B9: Output for ARIMA(0,1,1)(0,1,1)$_4$ on LY$_t$ Series

Regression Output D(LY,1,4) on MA(1) and SMA(4)

LS // Dependent Variable is D(LY,1,4)
Date: 01/10/00 Time: 10:17
Sample: 1961:2 1996:4
Included observations: 143
Excluded observations: 0 after adjusting endpoints
Convergence achieved after 4 iterations

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	-0.000793	0.000955	-0.830622	0.4076
MA(1)	-0.461670	0.071385	-6.467340	0.0000
SMA(4)	-0.774250	0.052652	-14.70516	0.0000

R-squared	0.497286	Mean dependent var	-0.001804
Adjusted R-squared	0.490104	S.D. dependent var	0.118177
S.E. of regression	0.084386	Akaike info criterion	-4.923942
Sum squared resid	0.996950	Schwartz criterion	-4.861784
Log likelihood	152.1536	F-statistic	69.24410
Durbin-Watson stat	2.026152	Prob(F-statistic)	0.000000

Inverted MA Roots	.94	.46	.00 -.94i

Tracking and Forecasting Performance Output

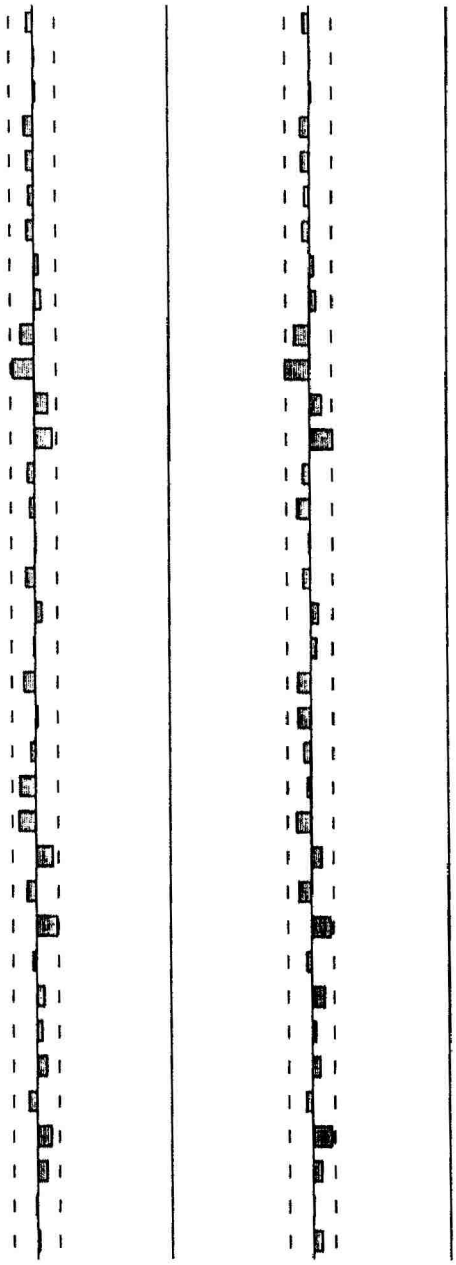
Actual: LY Forecast: LYF
Sample: 1961:2 1996:4
Include observations: 143

Root Mean Squared Error	0.083497
Mean Absolute Error	0.065400
Mean Absolute Percentage Error	7.190319
Theil Inequality Coefficient	0.039068
Bias Proportion	0.000447
Variance Proportion	0.004920
Covariance Proportion	0.994633

Exhibit B5: Autocorrelation Plot of Residuals from ARIMA(0,1,1)(0,1,1)L Y_t

Correlogram of Residuals

Date: 05/07/00 Time: 11:16
Sample: 1961:2 1996:4
Included observations: 143
Q-statistic probabilities adjusted for 2 ARMA term(s)



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.035	-0.035	0.1833	
		2	0.013	0.012	0.2080	
		3	0.022	0.023	0.2778	0.598
		4	-0.065	-0.063	0.9011	0.637
		5	-0.048	-0.053	1.2452	0.742
		6	-0.029	-0.032	1.3732	0.849
		7	-0.043	-0.042	1.6592	0.894
		8	0.039	0.034	1.8879	0.930
		9	0.055	0.054	2.3585	0.937
		10	-0.096	-0.099	3.8038	0.874
		11	-0.154	-0.177	7.5230	0.583
		12	0.104	0.095	9.2423	0.509
		13	0.138	0.177	12.285	0.343
		14	-0.048	-0.043	12.648	0.395
		15	-0.027	-0.085	12.767	0.466
		16	0.011	-0.005	12.788	0.543
		17	-0.060	-0.043	13.391	0.572
		18	0.049	0.065	13.796	0.614
		19	-0.006	0.043	13.802	0.681
		20	-0.078	-0.089	14.822	0.674
		21	0.020	-0.083	14.890	0.730
		22	-0.029	-0.045	15.034	0.774
		23	-0.114	-0.023	17.286	0.694
		24	-0.121	-0.105	19.842	0.593
		25	0.131	0.079	22.846	0.470
		26	-0.058	-0.087	23.448	0.493
		27	0.157	0.141	27.871	0.314
		28	-0.024	-0.031	27.976	0.360
		29	0.060	0.093	28.639	0.379
		30	0.044	0.025	29.000	0.413
		31	0.080	0.066	30.190	0.405
		32	-0.056	-0.036	30.772	0.427
		33	0.107	0.143	32.912	0.374
		34	0.078	0.068	34.075	0.368
		35	-0.005	0.015	34.080	0.415
		36	0.018	0.068	34.143	0.461

Table B10: Output for ARIMA(0,1,1)(0,1,1)$_4$ on Y1$_t$ Series

Regression Output D(Y1,1,4) on MA(1) and SMA(4)

LS // Dependent Variable is D(Y1,1,4)
Date: 01/10/00 Time: 10:48
Sample: 1961:2 1996:4
Included observations: 143
Excluded observations: 0 after adjusting endpoints
Convergence achieved after 4 iterations

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	0.000729	0.000771	0.944627	0.3465
MA(1)	-0.473520	0.069396	-6.823471	0.0000
SMA(4)	-0.784360	0.050182	-15.63034	0.0000

R-squared	0.512814	Mean dependent var	0.001256
Adjusted R-squared	0.505854	S.D. dependent var	0.101979
S.E. of regression	0.071687	Akaike info criterion	-5.250150
Sum squared resid	0.719454	Schwartz criterion	-5.187992
Log likelihood	175.4775	F-statistic	73.68225
Durbin-Watson stat	2.077949	Prob(F-statistic)	0.000000

Inverted MA Roots .94 .47 .00 -.94i

Tracking and Forecasting Performance Output

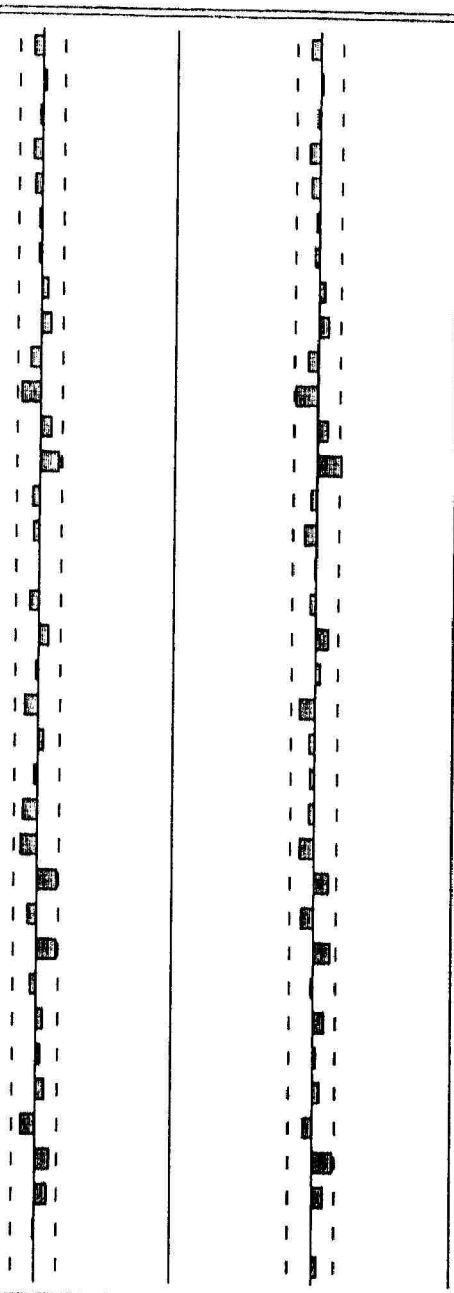
Actual: Y1 Forecast: Y1F
Sample: 1961:2 1996:4
Include observations: 143

Root Mean Squared Error	0.070931
Mean Absolute Error	0.055570
Mean Absolute Percentage Error	3.318631
Theil Inequality Coefficient	0.020776
Bias Proportion	0.000988
Variance Proportion	0.006265
Covariance Proportion	0.992747

Exhibit B6: Autocorrelation Plot of Residuals from ARIMA(0,1,1)(0,1,1) $Y1_t$

Correlogram of Residuals

Date: 05/07/00 Time: 11:27
Sample: 1961:2 1996:4
Included observations: 143
Q-statistic probabilities adjusted for 2 ARMA term(s)



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.061	-0.061	0.5445	
		2	0.026	0.023	0.6474	
		3	-0.011	-0.008	0.6665	0.414
		4	-0.064	-0.066	1.2824	0.527
		5	-0.048	-0.056	1.6291	0.653
		6	-0.010	-0.013	1.6442	0.801
		7	-0.016	-0.017	1.6828	0.891
		8	0.050	0.044	2.0704	0.913
		9	0.074	0.075	2.9163	0.893
		10	-0.068	-0.067	3.6394	0.888
		11	-0.138	-0.157	6.6429	0.674
		12	0.086	0.080	7.8224	0.646
		13	0.141	0.184	10.984	0.445
		14	-0.046	-0.037	11.325	0.501
		15	-0.034	-0.087	11.509	0.568
		16	0.001	-0.006	11.509	0.646
		17	-0.060	-0.036	12.098	0.672
		18	0.079	0.093	13.145	0.662
		19	-0.010	0.034	13.162	0.725
		20	-0.091	-0.110	14.546	0.693
		21	0.048	-0.039	14.945	0.726
		22	-0.023	-0.031	15.034	0.774
		23	-0.104	-0.034	16.902	0.717
		24	-0.119	-0.103	19.360	0.623
		25	0.152	0.108	23.435	0.436
		26	-0.061	-0.085	24.094	0.456
		27	0.154	0.125	28.308	0.294
		28	-0.038	-0.014	28.566	0.331
		29	0.050	0.086	29.017	0.360
		30	0.034	0.030	29.235	0.401
		31	0.073	0.056	30.228	0.403
		32	-0.102	-0.062	32.184	0.359
		33	0.113	0.150	34.593	0.300
		34	0.091	0.083	36.167	0.280
		35	-0.007	0.008	36.176	0.323
		36	0.008	0.041	36.187	0.367

Table B11: Output for ARIMA(0,1,1)(0,1,1)$_4$ on Y2$_t$ Series

Regression Output D(Y2,1,4) on MA(1) and SMA(4)

LS // Dependent Variable is D(Y2,1,4)

Sample: 1961:2 1996:4
Included observations: 143
Excluded observations: 0 after adjusting endpoints
Convergence achieved after 4 iterations

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	0.002904	0.002794	1.039399	0.3004
MA(1)	-0.487696	0.068007	-7.171214	0.0000
SMA(4)	-0.772290	0.049680	-15.54537	0.0000

R-squared	0.518072	Mean dependent var	0.003392
Adjusted R-squared	0.511187	S.D. dependent var	0.364890
S.E. of regression	0.255113	Akaike info criterion	-2.711339
Sum squared resid	9.111593	Schwartz criterion	-2.649181
Log likelihood	-6.047467	F-statistic	75.24977
Durbin-Watson stat	2.115005	Prob(F-statistic)	0.000000

Inverted MA Roots .94 .49 .00 -.94I .00+.94I
-.94

Tracking and Forecasting Performance Output

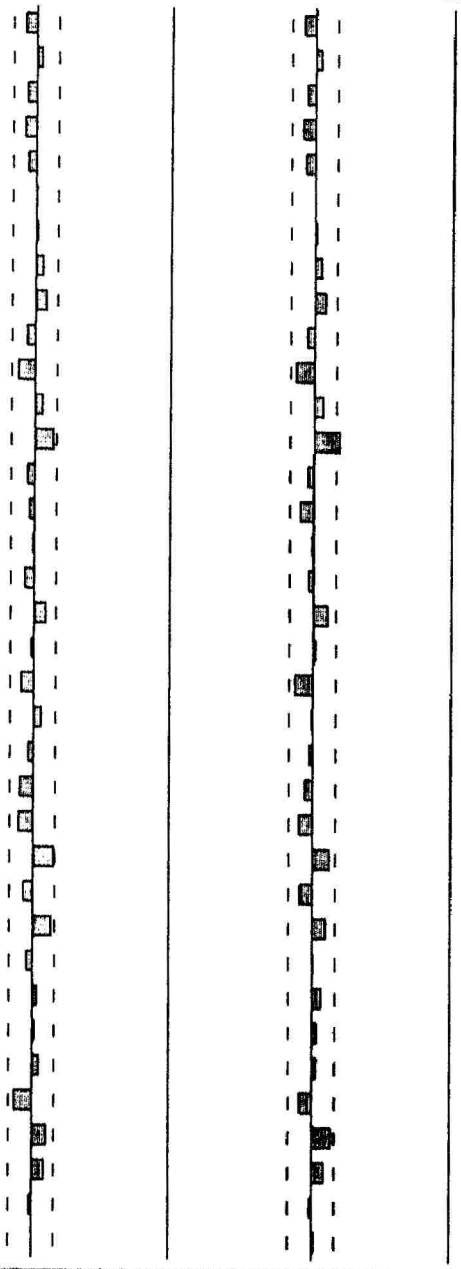
Actual: Y2 Forecast: Y2F
Sample: 1961:2 1996:4
Include observations: 143

Root Mean Squared Error	0.252423
Mean Absolute Error	0.196376
Mean Absolute Percentage Error	6.924668
Theil Inequality Coefficient	0.041612
Bias Proportion	0.001107
Variance Proportion	0.005670
Covariance Proportion	0.993222

Exhibit B7: Autocorrelation Plot of Residuals from ARIMA(0,1,1)(0,1,1)$Y2_t$

Correlogram of Residuals

Date: 05/07/00 Time: 11:28
Sample: 1961:2 1996:4
Included observations: 143
Q-statistic probabilities adjusted for 2 ARMA term(s)



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.077	-0.077	0.8765	
		2	0.049	0.043	1.2242	
		3	-0.059	-0.053	1.7430	0.187
		4	-0.075	-0.086	2.5779	0.276
		5	-0.054	-0.063	3.0237	0.388
		6	0.010	0.005	3.0382	0.551
		7	0.024	0.021	3.1268	0.680
		8	0.061	0.052	3.6983	0.717
		9	0.083	0.083	4.7604	0.689
		10	-0.052	-0.044	5.1858	0.738
		11	-0.120	-0.128	7.4422	0.591
		12	0.062	0.069	8.0510	0.624
		13	0.143	0.190	11.333	0.416
		14	-0.041	-0.036	11.609	0.478
		15	-0.031	-0.090	11.768	0.547
		16	-0.004	-0.002	11.771	0.625
		17	-0.061	-0.028	12.375	0.650
		18	0.095	0.108	13.860	0.609
		19	-0.010	0.023	13.877	0.676
		20	-0.087	-0.126	15.163	0.651
		21	0.062	-0.005	15.827	0.669
		22	-0.028	-0.022	15.961	0.719
		23	-0.094	-0.050	17.495	0.681
		24	-0.105	-0.090	19.404	0.620
		25	0.160	0.123	23.920	0.408
		26	-0.061	-0.083	24.573	0.429
		27	0.146	0.100	28.364	0.291
		28	-0.034	0.015	28.567	0.331
		29	0.033	0.068	28.765	0.372
		30	0.020	0.039	28.839	0.421
		31	0.057	0.039	29.440	0.442
		32	-0.125	-0.082	32.337	0.352
		33	0.107	0.142	34.504	0.304
		34	0.096	0.096	36.267	0.276
		35	-0.013	-0.014	36.297	0.318
		36	0.007	0.023	36.306	0.362

Table B12: Forecast Yield Series (LY_t) By $(1 - B)(1 - B^4)\ LY_t = (1 + 0.461671B)(1 + 0.774250B^4)\varepsilon_t$

	Q1	Q2	Q3	Q4
1960:1	-1.723548	-1.652043	-1.682654	-1.608893
1961:1	-1.741673	-1.527886	-1.662557	-1.624401
1962:1	-1.667699	-1.491621	-1.509171	-1.468584
1963:1	-1.489576	-1.424105	-1.515661	-1.433932
1964:1	-1.531341	-1.287165	-1.349878	-1.252402
1965:1	-1.422485	-1.235752	-1.283380	-1.210360
1966:1	-1.281980	-1.044606	-1.153500	-1.119146
1967:1	-1.213941	-1.115120	-1.170060	-1.171384
1968:1	-1.305258	-1.120117	-1.201535	-1.122602
1969:1	-1.173048	-0.991964	-1.093847	-1.111878
1970:1	-1.257893	-1.134899	-1.240698	-1.238664
1971:1	-1.312595	-1.138555	-1.206167	-1.206704
1972:1	-1.273847	-1.087730	-1.176490	-1.231793
1973:1	-1.245747	-1.094859	-1.223446	-1.122026
1974:1	-1.261200	-1.094099	-1.208311	-1.193883
1975:1	-1.263665	-1.132162	-1.282320	-1.213972
1976:1	-1.301751	-1.168549	-1.246563	-1.151934
1977:1	-1.243042	-1.161864	-1.144295	-1.127051
1978:1	-1.187534	-1.008113	-1.077573	-1.164437
1979:1	-1.186359	-1.001491	-1.088240	-1.015722
1980:1	-1.094231	-0.957311	-0.979299	-1.011032
1981:1	-1.161541	-1.041590	-1.051682	-1.192807
1982:1	-1.171447	-1.002038	-1.156976	-1.071562
1983:1	-1.207827	-0.993628	-1.056959	-1.055665
1984:1	-1.170653	-0.926219	-0.993443	-0.948438
1985:1	-1.111220	-0.806697	-0.935713	-0.977823
1986:1	-1.036003	-0.732660	-0.760419	-0.707176
1987:1	-0.858129	-0.536686	-0.633400	-0.543721
1988:1	-0.715332	-0.358453	-0.553355	-0.537178
1989:1	-0.772700	-0.532037	-0.589727	-0.627253
1990:1	-0.814277	-0.543059	-0.747920	-0.740065
1991:1	-0.887443	-0.594090	-0.616803	-0.541596
1992:1	-0.718600	-0.521623	-0.606550	-0.629985
1993:1	-0.840767	-0.629246	-0.649762	-0.696740
1994:1	-0.819266	-0.554568	-0.563893	-0.606234
1995:1	-0.711862	-0.463408	-0.537190	-0.613839
1996:1	-0.760116	-0.572588	-0.610020	-0.716677

Table B13: Forecast Yield Series ($Y1_t$) By $(1 - B)(1 - B^4)\ Y1_t = (1 + 0.473520B)(1 + 0.784360\ B^4)\varepsilon_t$

	Q1	Q2	Q3	Q4
1960:1	2.367356	2.284213	2.319443	2.235459
1961:1	2.388908	2.159457	2.286731	2.259254
1962:1	2.301638	2.112732	2.124014	2.086955
1963:1	2.111239	2.040455	2.128687	2.049958
1964:1	2.153234	1.892523	1.960734	1.865565
1965:1	2.040460	1.841266	1.897260	1.825665
1966:1	1.907210	1.663536	1.775785	1.741449
1967:1	1.841907	1.730229	1.792567	1.790265
1968:1	1.923208	1.738538	1.820648	1.748631
1969:1	1.806115	1.625469	1.725481	1.738589
1970:1	1.877072	1.756293	1.855701	1.853395
1971:1	1.927597	1.760761	1.826451	1.825618
1972:1	1.892546	1.715890	1.799891	1.850048
1973:1	1.868752	1.724449	1.842131	1.751545
1974:1	1.879290	1.723567	1.828837	1.814887
1975:1	1.881797	1.759183	1.894630	1.833430
1976:1	1.916437	1.792535	1.864882	1.779909
1977:1	1.863718	1.787556	1.779154	1.758923
1978:1	1.815105	1.651218	1.716785	1.788560
1979:1	1.812707	1.646313	1.725612	1.664303
1980:1	1.733480	1.609050	1.638082	1.659326
1981:1	1.789518	1.688868	1.699749	1.814093
1982:1	1.801573	1.658148	1.783653	1.711374
1983:1	1.830203	1.646613	1.701712	1.697184
1984:1	1.800182	1.588461	1.648753	1.610730
1985:1	1.751845	1.487740	1.597831	1.630418
1986:1	1.692979	1.428999	1.469836	1.427767
1987:1	1.557493	1.284892	1.375481	1.312794
1988:1	1.454417	1.164972	1.317304	1.305632
1989:1	1.485729	1.287494	1.345351	1.368084
1990:1	1.512634	1.300828	1.450555	1.445918
1991:1	1.562293	1.337712	1.365631	1.314261
1992:1	1.444776	1.291416	1.356868	1.369787
1993:1	1.526394	1.370943	1.389362	1.417397
1994:1	1.511630	1.317788	1.331198	1.358023
1995:1	1.438569	1.256732	1.310707	1.360795
1996:1	1.468267	1.338634	1.362915	1.431035

Table B14: Forecast Yield Series ($Y2_t$) By $(1 - B)(1 - B^4)\ Y2_t = (1 + 0.487696\ B)(1 + 0.772290\ B^4)\varepsilon_t$

	Q1	Q2	Q3	Q4
1960:1	5.604376	5.217627	5.379815	4.997276
1961:1	5.706883	4.738845	5.201331	5.114062
1962:1	5.313728	4.512653	4.513036	4.352312
1963:1	4.491965	4.185944	4.522340	4.189754
1964:1	4.678728	3.548686	3.837715	3.440973
1965:1	4.192766	3.339090	3.590346	3.304796
1966:1	3.683379	2.676923	3.131701	2.992854
1967:1	3.421252	2.935061	3.202117	3.181010
1968:1	3.718219	2.979395	3.309331	3.048030
1969:1	3.301470	2.582089	2.965428	3.004855
1970:1	3.532813	3.064706	3.434399	3.429748
1971:1	3.724972	3.089350	3.337834	3.330522
1972:1	3.593751	2.928420	3.244327	3.421218
1973:1	3.508064	2.965894	3.406889	3.061175
1974:1	3.532296	2.961298	3.351665	3.292499
1975:1	3.539488	3.093883	3.586415	3.362165
1976:1	3.666994	3.219716	3.482571	3.182004
1977:1	3.477285	3.200576	3.184953	3.114895
1978:1	3.314800	2.705953	2.948494	3.203016
1979:1	3.298117	2.693105	2.987622	2.783301
1980:1	3.022952	2.567001	2.697553	2.764055
1981:1	3.211928	2.861392	2.911977	3.300529
1982:1	3.277784	2.760980	3.190546	2.939035
1983:1	3.374272	2.711299	2.910390	2.888194
1984:1	3.278293	2.508283	2.731370	2.605310
1985:1	3.119661	2.167852	2.547078	2.654072
1986:1	2.927663	1.989446	2.177663	2.037591
1987:1	2.505071	1.562473	1.894075	1.712647
1988:1	2.198171	1.245687	1.722696	1.687244
1989:1	2.251556	1.603821	1.812557	1.869342
1990:1	2.320282	1.657475	2.097350	2.087975
1991:1	2.453334	1.774070	1.879637	1.740488
1992:1	2.119752	1.650274	1.845097	1.882917
1993:1	2.340664	1.886061	1.943477	2.025649
1994:1	2.304560	1.731258	1.783820	1.867072
1995:1	2.105208	1.564023	1.719670	1.864208
1996:1	2.179405	1.811456	1.872028	2.055923