Critical Values for Multiple Structural Change Tests (Unpublished Tables)

Jushan Bai
New York University

Pierre Perron
Boston University

This version: February 7, 2003

Abstract

This unpublished appendix presents the full set of critical values used in Bai, J. and P. Perron (2003): "Critical Values for Multiple Structural Change Tests," manuscript, Boston University. Tables 1.a and 2.a are from Bai, J. and P. Perron (1998): "Estimating and Testing Linear Models with Multiple Structural Changes," *Econometrica*, 66, 47-78.

Table 1.a: Asymptotic Critical Values of the Multiple Break Test for $\epsilon = .05$.

The Entries are Quantiles x such that $P(\sup F_{k,q} \leq x/q) = \alpha$.

		Number of Breaks, k										
q	α	1	2	3	4	5	6	7	8	9	$UDmax$	$WDmax$
1	.90	8.02	7.87	7.07	6.61	6.14	5.74	5.40	5.09	4.81	8.78	9.14
	.95	9.63	8.78	7.85	7.21	6.69	6.23	5.86	5.51	5.20	10.17	10.91
	.975	11.17	9.81	8.52	7.79	7.22	6.70	6.27	5.92	5.56	11.52	12.53
	.99	13.58	10.95	9.37	8.50	7.85	7.21	6.75	6.33	5.98	13.74	15.02
2	.90	11.02	10.48	9.61	8.99	8.50	8.06	7.66	7.32	7.01	11.69	12.33
	.95	12.89	11.60	10.46	9.71	9.12	8.65	8.19	7.79	7.46	13.27	14.19
	.975	14.53	12.64	11.20	10.29	9.69	9.10	8.64	8.18	7.80	14.69	16.04
	.99	16.64	13.78	12.06	11.00	10.28	9.65	9.11	8.66	8.22	16.79	18.11
3	.90	13.43	12.73	11.76	11.04	10.49	10.02	9.59	9.21	8.86	14.05	14.76
	.95	15.37	13.84	12.64	11.83	11.15	10.61	10.14	9.71	9.32	15.80	16.82
	.975	17.17	14.91	13.44	12.49	11.75	11.13	10.62	10.14	9.72	17.36	18.79
	.99	19.25	16.27	14.48	13.40	12.56	11.80	11.22	10.67	10.19	19.38	20.81
4	.90	15.53	14.65	13.63	12.91	12.33	11.79	11.34	10.93	10.55	16.17	16.95
	.95	17.60	15.84	14.63	13.71	12.99	12.42	11.91	11.49	11.04	17.88	19.07
	.975	19.35	16.85	15.44	14.43	13.64	13.01	12.46	11.94	11.49	19.51	20.89
	.99	21.20	18.21	16.43	15.21	14.45	13.70	13.04	12.48	12.02	21.25	22.81
5	.90	17.42	16.45	15.44	14.69	14.05	13.51	13.02	12.59	12.18	17.94	18.85
	.95	19.50	17.60	16.40	15.52	14.79	14.19	13.63	13.16	12.70	19.74	20.95
	.975	21.47	18.75	17.26	16.13	15.40	14.75	14.19	13.66	13.17	21.57	23.04
	.99	23.99	20.18	18.19	17.09	16.14	15.34	14.81	14.26	13.72	24.00	25.46
6	.90	19.38	18.15	17.17	16.39	15.74	15.18	14.63	14.18	13.74	19.92	20.89
	.95	21.59	19.61	18.23	17.27	16.50	15.86	15.29	14.77	14.30	21.90	23.27
	.975	23.73	20.80	19.15	18.07	17.21	16.49	15.84	15.29	14.78	23.83	25.22
	.99	25.95	22.18	20.29	18.93	17.97	17.20	16.54	15.94	15.35	26.07	27.63
7	.90	21.23	19.93	18.75	17.98	17.28	16.69	16.16	15.69	15.24	21.79	22.81
	.95	23.50	21.30	19.83	18.91	18.10	17.43	16.83	16.28	15.79	23.77	25.02
	.975	25.23	22.54	20.85	19.68	18.79	18.03	17.38	16.79	16.31	25.46	26.92
	.99	28.01	24.07	21.89	20.68	19.68	18.81	18.10	17.49	16.96	28.02	29.57
8	.90	22.92	21.56	20.43	19.58	18.84	18.21	17.69	17.19	16.70	23.53	24.55
	.95	25.22	23.03	21.48	20.46	19.66	18.97	18.37	17.80	17.30	25.51	26.83
	.975	27.21	24.20	22.41	21.29	20.39	19.63	18.98	18.34	17.78	27.32	28.98
	.99	29.60	25.66	23.44	22.22	21.22	20.40	19.66	19.03	18.46	29.60	31.32
9	.90	24.75	23.15	21.98	21.12	20.37	19.72	19.13	18.58	18.09	25.19	26.40
	.95	27.08	24.55	23.16	22.08	21.22	20.49	19.90	19.29	18.79	27.28	28.78
	.975	29.13	25.92	24.14	22.97	21.98	21.28	20.59	19.98	19.39	29.20	30.82
	.99	31.66	27.42	25.13	24.01	23.06	22.18	21.35	20.63	19.94	31.72	33.32
10	.90	26.13	24.70	23.48	22.57	21.83	21.16	20.57	20.03	19.55	26.66	27.79
	.95	28.49	26.17	24.59	23.59	22.71	21.93	21.34	20.74	20.17	28.75	30.16
	.975	30.67	27.52	25.69	24.47	23.45	22.71	21.95	21.34	20.79	30.84	32.46
	.99	33.62	29.14	26.90	25.58	24.44	23.49	22.75	22.09	21.47	33.86	35.47

Table 1.b: Asymptotic Critical Values of the Multiple Break Test for $\epsilon = .10$.

The Entries are Quantiles x such that $P(\sup F_{k,q} \leq x/q) = \alpha$.

		Number of Breaks, k									
q	α	1	2	3	4	5	6	7	8	$UDmax$	$WDmax$
1	.90	7.42	6.93	6.09	5.44	4.85	4.32	3.83	3.22	8.05	8.63
	.95	9.10	7.92	6.84	6.03	5.37	4.80	4.23	3.58	9.52	10.39
	.975	10.56	8.90	7.55	6.64	5.88	5.22	4.61	3.90	10.83	12.06
	.99	13.00	10.14	8.42	7.31	6.48	5.74	5.05	4.28	12.07	14.53
2	.90	10.37	9.43	8.48	7.68	7.02	6.37	5.77	4.98	10.86	11.71
	.95	12.25	10.58	9.29	8.37	7.62	6.90	6.21	5.41	12.59	13.66
	.975	13.86	11.63	10.14	9.05	8.17	7.40	6.63	5.73	14.15	15.33
	.99	16.19	12.90	11.12	9.87	8.84	8.01	7.18	6.18	16.19	17.80
3	.90	12.77	11.61	10.53	9.69	8.94	8.21	7.49	6.57	13.26	14.14
	.95	14.60	12.82	11.46	10.41	9.59	8.80	8.01	7.03	14.85	16.07
	.975	16.55	13.90	12.35	11.12	10.19	9.28	8.43	7.40	16.64	18.04
	.99	18.72	15.38	13.38	11.97	10.93	9.94	8.99	7.85	18.75	20.42
4	.90	14.81	13.56	12.36	11.43	10.61	9.86	9.04	8.01	15.23	16.27
	.95	16.76	14.72	13.30	12.25	11.29	10.42	9.58	8.46	17.00	18.38
	.975	18.62	15.88	14.22	12.96	11.94	11.05	10.06	8.93	18.75	20.30
	.99	20.75	17.24	15.30	13.93	12.78	11.67	10.64	9.47	20.75	22.35
5	.90	16.65	15.32	14.06	13.10	12.20	11.40	10.54	9.40	17.06	18.14
	.95	18.68	16.50	15.07	13.93	13.00	12.10	11.16	9.96	18.91	20.30
	.975	20.59	17.71	16.02	14.68	13.67	12.71	11.68	10.42	20.68	22.22
	.99	23.12	18.93	16.91	15.61	14.42	13.31	12.30	11.00	23.16	24.81
6	.90	18.65	17.01	15.75	14.70	13.78	12.92	11.98	10.80	19.06	20.22
	.95	20.76	18.32	16.81	15.67	14.65	13.68	12.63	11.34	21.01	22.55
	.975	23.05	19.69	17.82	16.47	15.31	14.24	13.20	11.89	23.25	24.66
	.99	25.50	21.15	19.04	17.48	16.19	15.11	13.88	12.55	25.55	27.28
7	.90	20.34	18.71	17.26	16.19	15.26	14.35	13.40	12.13	20.76	22.03
	.95	22.62	20.04	18.45	17.19	16.14	15.11	14.09	12.71	22.80	24.34
	.975	24.65	21.34	19.41	18.13	16.90	15.84	14.67	13.25	24.75	26.47
	.99	27.19	22.97	20.68	19.14	17.81	16.59	15.43	13.92	27.23	28.87
8	.90	22.01	20.32	18.90	17.75	16.79	15.82	14.80	13.45	22.42	23.71
	.95	24.34	21.69	20.01	18.74	17.66	16.65	15.54	14.07	24.56	26.10
	.975	26.50	22.98	20.95	19.69	18.52	17.35	16.15	14.67	26.54	28.24
	.99	29.01	24.51	22.40	20.68	19.41	18.08	16.83	15.30	29.01	30.62
9	.90	23.79	21.88	20.43	19.28	18.22	17.24	16.19	14.77	24.24	25.66
	.95	26.20	23.36	21.63	20.32	19.19	18.09	16.89	15.40	26.48	27.99
	.975	28.25	24.73	22.68	21.29	20.01	18.76	17.56	16.00	28.33	30.02
	.99	30.81	26.30	23.95	22.33	20.88	19.56	18.35	16.79	30.81	32.74
10	.90	25.29	23.33	21.89	20.71	19.63	18.59	17.50	16.00	25.64	27.05
	.95	27.64	24.87	23.11	21.79	20.58	19.47	18.29	16.70	27.82	29.46
	.975	29.80	26.37	24.27	22.71	21.42	20.21	18.94	17.33	29.90	31.58
	.99	32.80	28.24	25.63	23.83	22.32	21.04	19.73	18.10	32.82	34.51

Table 1.c: Asymptotic Critical Values of the Multiple Break Test for $\epsilon = .15$.

The Entries are Quantiles x such that $P(\sup F_{k,q} \leq x/q) = \alpha$.

		Number of Breaks, k						
q	α	1	2	3	4	5	$UDmax$	$WDmax$
1	.90	7.04	6.28	5.21	4.41	3.47	7.46	8.20
	.95	8.58	7.22	5.96	4.99	3.91	8.88	9.91
	.975	10.18	8.14	6.72	5.51	4.34	10.39	11.67
	.99	12.29	9.36	7.60	6.19	4.91	12.37	13.83
2	.90	9.81	8.63	7.54	6.51	5.27	10.16	11.15
	.95	11.47	9.75	8.36	7.19	5.85	11.70	12.81
	.975	12.96	10.75	9.15	7.81	6.38	13.18	14.58
	.99	15.37	12.15	10.27	8.65	7.00	15.41	17.01
3	.90	12.08	10.75	9.51	8.29	6.90	12.40	13.58
	.95	13.98	11.99	10.39	9.05	7.46	14.23	15.59
	.975	15.76	13.13	11.23	9.72	8.03	15.87	17.41
	.99	18.26	14.45	12.16	10.56	8.71	18.26	19.86
4	.90	14.26	12.60	11.21	9.97	8.37	14.58	15.88
	.95	16.19	13.77	12.17	10.79	9.09	16.37	17.83
	.975	18.13	14.99	13.06	11.55	9.66	18.24	19.82
	.99	20.23	16.55	14.26	12.42	10.53	20.39	21.95
5	.90	16.14	14.37	12.90	11.50	9.79	16.49	17.80
	.95	18.23	15.62	13.93	12.38	10.52	18.42	19.96
	.975	19.95	16.92	14.98	13.25	11.21	20.10	21.76
	.99	22.40	18.37	16.16	14.25	12.14	22.49	24.50
6	.90	17.97	16.02	14.45	13.00	11.19	18.23	19.66
	.95	20.08	17.37	15.58	13.90	11.94	20.30	21.86
	.975	22.15	18.62	16.50	14.68	12.63	22.27	23.97
	.99	24.45	20.06	17.57	15.73	13.44	24.55	26.68
7	.90	19.70	17.67	16.04	14.55	12.59	20.00	21.46
	.95	21.87	18.98	17.23	15.55	13.40	22.04	23.81
	.975	24.20	20.40	18.25	16.41	14.18	24.26	26.10
	.99	26.71	21.87	19.42	17.44	15.02	26.75	28.76
8	.90	21.41	19.16	17.47	15.88	13.89	21.70	23.31
	.95	23.70	20.62	18.69	16.96	14.77	23.87	25.63
	.975	25.77	21.97	19.71	17.91	15.52	25.88	27.80
	.99	28.51	23.58	20.96	19.00	16.56	28.51	30.40
9	.90	23.06	20.82	19.07	17.38	15.23	23.38	24.99
	.95	25.65	22.35	20.18	18.40	16.11	25.81	27.53
	.975	27.69	23.68	21.28	19.29	16.88	27.78	29.78
	.99	30.62	25.32	22.72	20.38	17.87	30.62	32.71
10	.90	24.65	22.26	20.42	18.73	16.54	24.90	26.62
	.95	27.03	23.80	21.62	19.79	17.44	27.23	29.06
	.975	29.27	24.99	22.74	20.81	18.26	29.36	31.47
	.99	32.16	26.82	24.41	22.09	19.27	32.17	34.25

Table 1.d: Asymptotic Critical Values of the Multiple Break Test for $\epsilon = .20$ and $.25$.

The Entries are Quantiles x such that $P(\sup F_{k,q} \leq x/q) = \alpha$.

$\epsilon = .20$		Number of Breaks, k					$\epsilon = .25$		Number of Breaks, k			
q	α	1	2	3	$UDmax$	$WDmax$	q	α	1	2	$UDmax$	$WDmax$
1	.90	6.72	5.59	4.37	6.96	7.67	1	.90	6.35	4.88	6.55	7.09
	.95	8.22	6.53	5.08	8.43	9.27		.95	7.86	5.80	8.01	8.69
	.975	9.77	7.49	5.73	9.94	10.93		.975	9.32	6.69	9.37	10.24
	.99	11.94	8.77	6.58	12.02	13.16		.99	11.44	7.92	11.50	12.27
2	.90	9.37	7.91	6.43	9.66	10.46	2	.90	8.96	7.06	9.16	9.80
	.95	10.98	8.98	7.13	11.16	12.15		.95	10.55	8.17	10.67	11.49
	.975	12.59	10.00	7.92	12.68	13.87		.975	12.21	9.16	12.25	13.02
	.99	14.92	11.30	8.95	14.92	16.52		.99	14.34	10.30	14.34	15.41
3	.90	11.59	9.93	8.21	11.84	12.79	3	.90	11.17	9.01	11.31	12.01
	.95	13.47	11.09	9.12	13.66	14.73		.95	13.04	10.16	13.15	13.99
	.975	15.28	12.25	9.91	15.31	16.65		.975	14.66	11.22	14.67	15.64
	.99	17.60	13.40	10.91	17.60	18.89		.99	17.08	12.55	17.08	18.03
4	.90	13.72	11.70	9.90	13.94	15.05	4	.90	13.22	10.74	13.36	14.16
	.95	15.67	12.94	10.78	15.79	17.04		.95	15.19	11.91	15.28	16.13
	.975	17.67	14.11	11.66	17.73	19.12		.975	17.04	13.00	17.13	18.17
	.99	19.82	15.74	12.99	19.90	21.27		.99	19.22	14.65	19.22	20.34
5	.90	15.51	13.46	11.50	15.74	16.80	5	.90	14.98	12.39	15.12	15.93
	.95	17.66	14.69	12.45	17.76	19.11		.95	17.12	13.65	17.14	18.11
	.975	19.51	15.96	13.49	19.59	20.84		.975	18.96	14.86	18.97	19.92
	.99	21.75	17.21	14.60	21.75	23.39		.99	21.51	16.18	21.51	22.39
6	.90	17.39	15.05	12.91	17.62	18.76	6	.90	16.77	13.96	16.94	17.92
	.95	19.55	16.35	13.91	19.69	21.04		.95	18.97	15.38	19.10	20.02
	.975	21.47	17.66	14.97	21.56	23.09		.975	20.93	16.53	20.97	22.08
	.99	23.80	19.25	16.29	23.80	25.17		.99	23.12	18.10	23.12	24.27
7	.90	19.11	16.67	14.46	19.30	20.56	7	.90	18.45	15.53	18.60	19.61
	.95	21.33	18.14	15.55	21.46	22.76		.95	20.75	16.97	20.84	21.81
	.975	23.36	19.41	16.56	23.40	25.03		.975	22.85	18.25	22.89	24.38
	.99	26.16	21.03	17.81	26.16	27.71		.99	25.67	19.91	25.67	26.77
8	.90	20.86	18.16	15.88	21.09	22.45	8	.90	20.15	16.91	20.30	21.38
	.95	23.19	19.58	17.10	23.28	24.68		.95	22.56	18.43	22.62	23.60
	.975	25.26	20.94	18.03	25.31	26.91		.975	24.56	19.68	24.61	25.76
	.99	27.71	22.71	19.37	27.71	29.30		.99	27.10	21.41	27.12	28.29
9	.90	22.38	19.71	17.30	22.55	24.00	9	.90	21.69	18.42	21.81	22.81
	.95	24.91	21.23	18.58	25.04	26.40		.95	24.18	19.93	24.28	25.40
	.975	26.96	22.69	19.51	27.02	28.54		.975	26.31	21.38	26.38	27.55
	.99	29.67	24.43	20.74	29.67	31.67		.99	29.12	23.23	29.12	30.57
10	.90	23.95	21.13	18.65	24.17	25.60	10	.90	23.29	19.84	23.43	24.43
	.95	26.38	22.62	19.91	26.51	28.02		.95	25.77	21.34	25.80	27.01
	.975	28.62	24.04	20.96	28.67	30.31		.975	27.80	22.79	27.91	29.13
	.99	31.38	25.73	22.34	31.40	32.99		.99	30.86	24.51	30.87	32.20

Table 2.a: Asymptotic Critical Values of the Sequential Test $F_T(\ell+1|\ell)$ for $\epsilon = .05$.

		ℓ									
q	α	0	1	2	3	4	5	6	7	8	9
1	.90	8.02	9.56	10.45	11.07	11.65	12.07	12.47	12.70	13.07	13.34
	.95	9.63	11.14	12.16	12.83	13.45	14.05	14.29	14.50	14.69	14.88
	.975	11.17	12.88	14.05	14.50	15.03	15.37	15.56	15.73	16.02	16.39
	.99	13.58	15.03	15.62	16.39	16.60	16.90	17.04	17.27	17.32	17.61
2	.90	11.02	12.79	13.72	14.45	14.90	15.35	15.81	16.12	16.44	16.58
	.95	12.89	14.50	15.42	16.16	16.61	17.02	17.27	17.55	17.76	17.97
	.975	14.53	16.19	17.02	17.55	17.98	18.15	18.46	18.74	18.98	19.22
	.99	16.64	17.98	18.66	19.22	20.03	20.87	20.97	21.19	21.43	21.74
3	.90	13.43	15.26	16.38	17.07	17.52	17.91	18.35	18.61	18.92	19.19
	.95	15.37	17.15	17.97	18.72	19.23	19.59	19.94	20.31	21.05	21.20
	.975	17.17	18.75	19.61	20.31	21.33	21.59	21.78	22.07	22.41	22.73
	.99	19.25	21.33	22.01	22.73	23.13	23.48	23.70	23.79	23.84	24.59
4	.90	15.53	17.54	18.55	19.30	19.80	20.15	20.48	20.73	20.94	21.10
	.95	17.60	19.33	20.22	20.75	21.15	21.55	21.90	22.27	22.63	22.83
	.975	19.35	20.76	21.60	22.27	22.84	23.44	23.74	24.14	24.36	24.54
	.99	21.20	22.84	24.04	24.54	24.96	25.36	25.51	25.58	25.63	25.88
5	.90	17.42	19.38	20.46	21.37	21.96	22.47	22.77	23.23	23.56	23.81
	.95	19.50	21.43	22.57	23.33	23.90	24.34	24.62	25.14	25.34	25.51
	.975	21.47	23.34	24.37	25.14	25.58	25.79	25.96	26.39	26.60	26.84
	.99	23.99	25.58	26.32	26.84	27.39	27.86	27.90	28.32	28.38	28.39
6	.90	19.38	21.51	22.81	23.64	24.19	24.59	24.86	25.27	25.53	25.87
	.95	21.59	23.72	24.66	25.29	25.89	26.36	26.84	27.10	27.26	27.40
	.975	23.73	25.41	26.37	27.10	27.42	28.02	28.39	28.75	29.13	29.44
	.99	25.95	27.42	28.60	29.44	30.18	30.52	30.64	30.99	31.25	31.33
7	.90	21.23	23.41	24.51	25.07	25.75	26.30	26.74	27.06	27.46	27.70
	.95	23.50	25.17	26.34	27.19	27.96	28.25	28.64	28.84	28.97	29.14
	.975	25.23	27.24	28.25	28.84	29.14	29.72	30.41	30.76	31.09	31.43
	.99	28.01	29.14	30.61	31.43	32.56	32.75	32.90	33.25	33.25	33.85
8	.90	22.92	25.15	26.38	27.09	27.77	28.15	28.61	28.90	29.19	29.49
	.95	25.22	27.18	28.21	28.99	29.54	30.05	30.45	30.79	31.29	31.75
	.975	27.21	29.01	30.09	30.79	31.80	32.50	32.81	32.86	33.20	33.60
	.99	29.60	31.80	32.84	33.60	34.23	34.57	34.75	35.01	35.50	35.65
9	.90	24.75	26.99	28.11	29.03	29.69	30.18	30.61	30.93	31.14	31.46
	.95	27.08	29.10	30.24	30.99	31.48	32.46	32.71	32.89	33.15	33.43
	.975	29.13	31.04	32.48	32.89	33.47	33.98	34.25	34.74	34.88	35.07
	.99	31.66	33.47	34.60	35.07	35.49	37.08	37.12	37.23	37.47	37.68
10	.90	26.13	28.40	29.68	30.62	31.25	31.81	32.37	32.78	33.09	33.53
	.95	28.49	30.65	31.90	32.83	33.57	34.27	34.53	35.01	35.33	35.65
	.975	30.67	32.87	34.27	35.01	35.86	36.32	36.65	36.90	37.15	37.41
	.99	33.62	35.86	36.68	37.41	38.20	38.70	38.91	39.09	39.11	39.12

Table 2.b: Asymptotic Critical Values of the Sequential Test $F_T(\ell+1|\ell)$ for $\epsilon = .10$.

		ℓ									
q	α	0	1	2	3	4	5	6	7	8	9
1	.90	7.42	9.05	9.97	10.49	10.91	11.29	11.86	12.26	12.57	12.84
	.95	9.10	10.55	11.36	12.35	12.97	13.45	13.88	14.12	14.45	14.51
	.975	10.56	12.37	13.46	14.13	14.51	14.88	15.37	15.47	15.62	15.79
	.99	13.00	14.51	15.44	15.73	16.39	16.60	16.78	16.90	16.99	17.04
2	.90	10.37	12.19	13.20	13.79	14.37	14.68	15.07	15.42	15.81	16.09
	.95	12.25	13.83	14.73	15.46	16.13	16.55	16.82	17.07	17.34	17.58
	.975	13.86	15.51	16.55	17.07	17.58	17.98	18.19	18.55	18.92	19.02
	.99	16.19	17.58	18.31	18.98	19.63	20.09	20.30	20.87	20.97	21.13
3	.90	12.77	14.54	15.64	16.46	16.94	17.35	17.68	17.93	18.35	18.55
	.95	14.60	16.53	17.43	17.98	18.61	19.02	19.25	19.61	19.94	20.35
	.975	16.55	17.99	19.06	19.65	20.35	21.40	21.57	21.76	22.07	22.53
	.99	18.72	20.35	21.60	22.35	22.96	23.37	23.53	23.71	23.79	23.84
4	.90	14.81	16.70	17.84	18.51	19.13	19.50	19.93	20.15	20.46	20.67
	.95	16.76	18.56	19.53	20.24	20.72	21.13	21.55	21.83	22.08	22.40
	.975	18.62	20.30	21.18	21.86	22.40	22.83	23.42	23.63	23.77	24.14
	.99	20.75	22.40	23.55	24.13	24.54	24.96	25.11	25.50	25.56	25.58
5	.90	16.65	18.61	19.74	20.46	21.04	21.56	21.96	22.46	22.72	22.96
	.95	18.68	20.57	21.60	22.55	23.00	23.63	24.13	24.48	24.82	25.14
	.975	20.59	22.57	23.66	24.50	25.14	25.46	25.77	25.87	26.02	26.34
	.99	23.12	25.14	25.79	26.32	26.60	26.96	27.39	27.51	27.75	27.75
6	.90	18.65	20.63	22.03	22.90	23.57	24.08	24.38	24.73	25.10	25.29
	.95	20.76	23.01	24.14	24.77	25.48	25.89	26.25	26.77	26.96	27.14
	.975	23.05	24.79	25.91	26.80	27.14	27.42	27.85	28.10	28.55	28.89
	.99	25.50	27.14	27.92	28.75	29.44	30.12	30.18	30.29	30.52	30.64
7	.90	20.34	22.55	23.84	24.59	24.97	25.48	26.18	26.48	26.86	26.97
	.95	22.62	24.64	25.57	26.54	27.04	27.51	28.14	28.44	28.74	28.87
	.975	24.65	26.56	27.53	28.51	28.87	29.08	29.43	29.85	30.35	30.68
	.99	27.19	28.87	29.51	30.43	31.38	32.56	32.62	32.87	32.90	33.25
8	.90	22.01	24.24	25.49	26.31	26.98	27.55	27.92	28.16	28.64	28.89
	.95	24.34	26.42	27.66	28.25	28.99	29.34	29.86	30.29	30.50	30.68
	.975	26.50	28.29	29.36	30.34	30.68	31.82	32.42	32.64	32.82	33.08
	.99	29.01	30.68	32.52	32.86	33.27	34.10	34.26	34.38	34.57	34.72
9	.90	23.79	26.14	27.34	28.16	28.83	29.33	29.86	30.23	30.46	30.74
	.95	26.20	28.23	29.44	30.31	30.77	31.35	31.91	32.60	32.71	32.86
	.975	28.25	30.31	31.41	32.60	32.86	33.39	33.79	34.00	34.35	34.75
	.99	30.81	32.86	33.92	34.60	35.07	35.66	37.08	37.12	37.22	37.23
10	.90	25.29	27.59	28.75	29.71	30.35	30.99	31.41	31.82	32.25	32.61
	.95	27.64	29.78	31.02	31.90	32.71	33.32	33.95	34.29	34.52	34.81
	.975	29.80	31.90	33.34	34.31	34.81	35.65	36.23	36.36	36.65	36.72
	.99	32.80	34.81	36.32	36.65	37.15	38.20	38.60	38.70	38.80	39.09

Table 2.c: Asymptotic Critical Values of the Sequential Test $F_T(\ell+1|\ell)$ for $\epsilon = .15$.

		ℓ									
q	α	0	1	2	3	4	5	6	7	8	9
1	.90	7.04	8.51	9.41	10.04	10.58	11.03	11.43	11.75	12.01	12.20
	.95	8.58	10.13	11.14	11.83	12.25	12.66	13.08	13.35	13.75	13.89
	.975	10.18	11.86	12.66	13.40	13.89	14.32	14.73	14.89	15.22	15.29
	.99	12.29	13.89	14.80	15.28	15.76	16.27	16.63	16.77	16.81	17.01
2	.90	9.81	11.40	12.29	12.90	13.47	13.98	14.36	14.70	15.11	15.28
	.95	11.47	12.95	14.03	14.85	15.29	15.80	16.16	16.44	16.77	16.84
	.975	12.96	14.92	15.81	16.51	16.84	17.18	17.61	17.84	18.32	18.76
	.99	15.37	16.84	17.72	18.67	19.17	19.46	19.74	19.93	20.12	20.53
3	.90	12.08	13.91	14.96	15.68	16.35	16.81	17.24	17.51	17.87	18.12
	.95	13.98	15.72	16.83	17.61	18.14	18.74	19.09	19.41	19.68	19.77
	.975	15.76	17.70	18.87	19.42	19.77	20.45	20.57	20.82	21.51	22.00
	.99	18.26	19.77	20.75	21.98	22.46	22.69	22.93	23.11	23.12	23.15
4	.90	14.26	16.11	17.31	18.00	18.45	18.84	19.22	19.61	19.92	20.07
	.95	16.19	18.11	18.93	19.64	20.19	20.54	21.21	21.42	21.72	21.97
	.975	18.13	19.70	20.66	21.46	21.97	22.52	22.79	22.82	23.03	23.13
	.99	20.23	21.97	22.80	23.06	23.76	24.55	24.85	25.11	25.53	25.57
5	.90	16.14	18.14	19.10	19.84	20.50	20.96	21.42	21.68	21.95	22.28
	.95	18.23	19.91	20.99	21.71	22.37	22.77	23.15	23.42	24.04	24.42
	.975	19.95	21.72	22.81	23.47	24.42	24.83	25.28	25.59	25.98	26.29
	.99	22.40	24.42	25.53	26.17	26.53	26.77	26.96	27.10	27.35	27.37
6	.90	17.97	20.01	21.16	22.08	22.64	23.02	23.35	23.70	24.10	24.37
	.95	20.08	22.11	23.04	23.77	24.43	24.75	24.96	25.22	25.61	25.93
	.975	22.15	23.79	24.76	25.22	25.93	26.58	26.99	27.11	27.40	27.76
	.99	24.45	25.93	27.09	27.56	28.20	29.61	29.62	30.27	30.45	30.56
7	.90	19.70	21.79	22.87	24.06	24.68	25.10	25.66	25.97	26.29	26.50
	.95	21.87	24.17	25.13	26.03	26.65	27.06	27.37	27.90	28.18	28.36
	.975	24.20	26.03	27.06	27.91	28.36	28.72	29.17	29.43	29.66	30.00
	.99	26.71	28.36	29.30	29.86	30.52	30.89	30.95	31.03	31.11	31.17
8	.90	21.41	23.62	24.74	25.63	26.39	26.73	27.29	27.56	28.06	28.46
	.95	23.70	25.75	26.81	27.65	28.48	28.80	29.08	29.30	29.50	29.69
	.975	25.77	27.72	28.80	29.33	29.69	30.02	30.46	30.74	30.90	31.07
	.99	28.51	29.69	30.65	31.03	31.87	32.42	32.67	33.00	33.11	33.45
9	.90	23.06	25.54	26.68	27.60	28.25	28.79	29.19	29.52	29.94	30.43
	.95	25.65	27.66	28.91	29.67	30.52	30.96	31.48	31.77	31.94	32.33
	.975	27.69	29.67	31.00	31.78	32.33	33.06	33.51	33.68	34.16	34.58
	.99	30.62	32.33	33.51	34.28	34.94	35.71	36.03	36.34	36.48	36.49
10	.90	24.65	26.92	28.26	29.18	29.88	30.40	30.90	31.40	31.75	32.03
	.95	27.03	29.24	30.45	31.45	32.12	32.50	32.84	33.12	33.22	33.85
	.975	29.27	31.47	32.54	33.15	33.85	34.32	34.45	34.76	34.94	35.15
	.99	32.16	33.85	34.58	35.14	36.15	36.76	36.92	37.37	37.87	37.96

Table 2.d: Asymptotic Critical Values of the Sequential Test $F_T(\ell+1|\ell)$ for $\epsilon = .20$.

		ℓ									
q	α	0	1	2	3	4	5	6	7	8	9
1	.90	6.72	8.13	9.07	9.66	10.17	10.59	10.95	11.28	11.64	11.89
	.95	8.22	9.71	10.66	11.34	11.93	12.30	12.68	12.92	13.21	13.61
	.975	9.77	11.34	12.31	12.99	13.61	13.87	14.25	14.37	14.73	14.86
	.99	11.94	13.61	14.31	14.80	15.26	15.76	15.87	16.23	16.33	16.63
2	.90	9.37	10.92	11.90	12.50	12.89	13.38	13.84	14.15	14.41	14.66
	.95	10.98	12.55	13.46	14.22	14.78	15.37	15.81	16.13	16.44	16.69
	.975	12.59	14.22	15.39	16.14	16.69	17.00	17.18	17.53	17.65	17.83
	.99	14.92	16.69	17.41	17.72	18.27	19.06	19.17	19.23	19.54	19.74
3	.90	11.59	13.43	14.43	15.16	15.72	16.24	16.69	16.95	17.32	17.42
	.95	13.47	15.25	16.36	17.08	17.51	18.08	18.44	18.89	19.01	19.35
	.975	15.28	17.08	18.10	18.91	19.35	19.70	20.00	20.21	20.53	20.72
	.99	17.60	19.35	20.02	20.64	21.23	21.98	22.19	22.54	22.90	22.93
4	.90	13.72	15.59	16.67	17.53	18.17	18.52	18.84	19.12	19.43	19.67
	.95	15.67	17.61	18.54	19.21	19.80	20.22	20.53	21.06	21.31	21.55
	.975	17.67	19.22	20.25	21.19	21.55	21.88	22.18	22.52	22.77	22.82
	.99	19.82	21.55	22.27	22.80	23.06	23.76	23.97	24.55	24.78	24.85
5	.90	15.51	17.59	18.76	19.43	20.02	20.53	20.91	21.21	21.59	21.70
	.95	17.66	19.50	20.63	21.40	21.72	22.19	22.72	23.01	23.24	23.67
	.975	19.51	21.42	22.28	23.04	23.67	24.20	24.47	24.79	24.94	25.28
	.99	21.75	23.67	24.60	25.18	25.76	26.29	26.42	26.53	26.65	26.67
6	.90	17.39	19.49	20.65	21.37	22.07	22.57	22.90	23.12	23.38	23.63
	.95	19.55	21.44	22.64	23.19	23.75	24.28	24.46	24.75	24.96	25.02
	.975	21.47	23.21	24.28	24.76	25.02	25.70	26.07	26.43	26.73	26.95
	.99	23.80	25.02	26.24	26.77	27.27	27.76	28.12	28.48	28.56	28.80
7	.90	19.11	21.24	22.42	23.20	24.13	24.68	25.00	25.31	25.76	26.03
	.95	21.33	23.31	24.75	25.38	26.10	26.47	26.87	27.15	27.37	27.74
	.975	23.36	25.47	26.47	27.20	27.74	28.21	28.40	28.63	29.09	29.29
	.99	26.16	27.74	28.50	29.17	29.66	30.52	30.66	30.89	30.93	30.95
8	.90	20.86	23.09	24.30	25.14	25.76	26.27	26.59	27.06	27.41	27.58
	.95	23.19	25.23	26.39	27.19	27.63	28.09	28.49	28.70	28.83	29.02
	.975	25.26	27.19	28.10	28.70	29.02	29.41	29.62	29.91	30.11	30.46
	.99	27.71	29.02	29.71	30.20	30.78	31.03	31.80	32.42	32.42	32.47
9	.90	22.38	24.80	26.10	26.88	27.47	28.05	28.40	28.79	29.16	29.51
	.95	24.91	26.92	28.10	28.93	29.64	30.29	30.87	31.09	31.39	31.67
	.975	26.96	28.98	30.34	31.13	31.67	31.89	32.26	32.84	33.14	33.51
	.99	29.67	31.67	32.52	33.28	33.81	34.81	35.22	35.54	35.71	36.03
10	.90	23.95	26.33	27.50	28.50	29.13	29.52	30.07	30.43	30.87	31.17
	.95	26.38	28.56	29.62	30.48	31.23	31.96	32.20	32.38	32.72	32.90
	.975	28.62	30.50	31.97	32.39	32.90	33.20	33.90	34.33	34.53	34.76
	.99	31.38	32.90	34.12	34.68	35.00	36.15	36.76	36.92	37.14	37.37

Table 2.e: Asymptotic Critical Values of the Sequential Test $F_T(\ell+1|\ell)$ for $\epsilon = .25$.

		ℓ									
q	α	0	1	2	3	4	5	6	7	8	9
1	.90	6.35	7.79	8.70	9.22	9.71	10.06	10.45	10.89	11.16	11.30
	.95	7.86	9.29	10.12	10.93	11.37	11.82	12.20	12.65	12.79	13.09
	.975	9.32	10.94	11.86	12.66	13.09	13.51	13.85	14.16	14.37	14.70
	.99	11.44	13.09	14.02	14.63	14.89	15.29	15.76	16.13	16.17	16.23
2	.90	8.96	10.50	11.47	12.13	12.56	12.94	13.29	13.76	14.03	14.22
	.95	10.55	12.19	12.97	13.84	14.32	14.92	15.28	15.48	15.87	16.34
	.975	12.21	13.85	14.94	15.48	16.34	16.55	16.80	16.82	17.06	17.34
	.99	14.34	16.34	16.81	17.18	17.61	17.83	17.85	18.32	18.67	19.06
3	.90	11.17	12.96	13.96	14.58	15.13	15.54	15.93	16.47	16.79	16.96
	.95	13.04	14.65	15.60	16.51	17.08	17.39	17.76	18.08	18.32	18.72
	.975	14.66	16.56	17.40	18.12	18.72	19.01	19.40	19.73	20.02	20.50
	.99	17.08	18.72	19.58	20.45	20.72	21.27	21.98	22.46	22.54	22.57
4	.90	13.22	15.16	16.14	16.94	17.52	17.97	18.34	18.67	18.84	19.04
	.95	15.19	17.00	18.10	18.72	19.14	19.63	20.10	20.50	20.98	21.23
	.975	17.04	18.73	19.64	20.52	21.23	21.71	21.95	22.24	22.56	22.79
	.99	19.22	21.23	22.07	22.61	22.89	23.17	23.77	23.97	24.55	24.78
5	.90	14.98	16.98	18.12	18.87	19.47	19.90	20.47	20.74	21.00	21.44
	.95	17.12	18.94	20.02	20.81	21.45	21.72	22.10	22.69	22.98	23.15
	.975	18.96	20.83	21.75	22.69	23.15	23.82	24.20	24.43	24.77	24.83
	.99	21.51	23.15	24.36	24.82	25.18	25.76	25.98	26.42	26.43	26.53
6	.90	16.77	18.88	20.03	20.83	21.41	21.83	22.28	22.58	22.83	23.04
	.95	18.97	20.89	21.92	22.66	23.09	23.42	23.96	24.28	24.46	24.75
	.975	20.93	22.70	23.49	24.35	24.75	25.02	25.58	25.83	26.30	26.68
	.99	23.12	24.75	25.73	26.58	26.99	27.44	27.56	28.00	28.12	28.56
7	.90	18.45	20.69	21.81	22.73	23.49	24.19	24.60	24.87	25.08	25.60
	.95	20.75	22.78	24.24	24.93	25.66	26.03	26.28	26.56	26.87	27.21
	.975	22.85	24.93	26.05	26.66	27.21	27.75	27.99	28.36	28.61	29.09
	.99	25.67	27.21	28.21	28.80	29.43	29.86	30.38	30.55	30.71	30.89
8	.90	20.15	22.51	23.56	24.42	25.11	25.61	25.95	26.43	26.59	26.90
	.95	22.56	24.54	25.71	26.50	27.01	27.51	27.74	28.09	28.48	28.70
	.975	24.56	26.51	27.52	28.10	28.70	29.01	29.46	29.69	29.93	30.11
	.99	27.10	28.70	29.53	30.02	30.74	31.01	31.80	32.42	32.42	32.47
9	.90	21.69	24.08	25.45	26.19	26.79	27.33	27.78	28.23	28.54	28.99
	.95	24.18	26.28	27.42	28.27	29.03	29.67	30.34	30.79	30.93	31.13
	.975	26.31	28.28	29.67	30.81	31.13	31.73	32.26	32.84	33.14	33.28
	.99	29.12	31.13	32.52	33.25	33.62	34.65	34.81	35.22	35.54	35.71
10	.90	23.29	25.72	26.97	27.69	28.55	29.13	29.48	29.90	30.30	30.75
	.95	25.77	27.75	29.18	30.02	30.83	31.40	31.92	32.20	32.38	32.72
	.975	27.80	30.07	31.40	32.20	32.72	33.00	33.20	34.02	34.37	34.68
	.99	30.86	32.72	33.54	34.58	34.94	35.58	36.15	36.91	36.92	37.14