Appendix

The full table of our key classification experiments is shown below.

For simplicity, we use the common condition of $v_2[t-1]$ (equal to 0 or 1) to represent the determination with two groups $v_2[t]=0 \& v_3[t-1]=v_2[t-1]$ and $v_2[t]=1 \& v_3[t-1]=v_2[t-1]$.

Symbols p_1, q_1, p_2, q_2 denote the proportions of corresponding groups, with the same meanings as those in **Table 5**. The calculation of $P(k_0[t])$ has been discussed in Section 3.1, which is $(1+|p_1-p_2|)/2$ or $(1+|q_1-q_2|)/2$.

Table 7. Results of key classification experiments (full table)

t	conditions	boundline	p_1	q_1	p_2	q_2	$P(k_0[t])$
0	/	$e_{26} \leq -5.205$	0%	/	100%	/	1
1	$v_2[t-1]=0$	$e_{27} \leq -5.165$	0%	/	100%	/	1
1	$v_2[t-1]=1$	$e_{27} \leq -5.185$	/	100%	/	0%	1
2	$v_2[t-1]=0$	$e_{28} \leq -5.075$	0%	/	100%	/	1
2	$v_2[t-1]=1$	$e_{28} \leq -5.09$	/	100%	/	0%	1
3	$v_2[t-1]=0$	$e_{29} \leq -5.095$	0%	/	100%	/	1
3	$v_2[t-1]=1$	$e_{29} \leq -5.125$	/	100%	/	0%	1
4	$v_2[t-1]=0$	$e_{30} \leq -5.415$	0.4%	/	99.8%	/	0.997
4	$v_2[t-1]=1$	$e_{30} \leq -5.455$	/	99.7%	/	0.2%	0.997
5	$v_2[t-1]=0$	$e_{31} \leq -5.40$	0.3%	/	99.9%	/	0.998
5	$v_2[t-1]=1$	$e_{31} \leq -5.385$	/	99.9%	/	0.5%	0.997
6	$v_2[t-1]=0$	$e_{32} \leq -4.535$	0.4%	/	100%	/	0.998
6	$v_2[t-1]=1$	$e_{32} \leq -4.535$	/	99.9%	/	0.5%	0.997
7	$v_2[t-1]=0$	$e_{33} \leq -4.445$	0.6%	/	99.8%	/	0.996
7	$v_2[t-1]=1$	$e_{33} \leq -4.455$	/	99.9%	/	0.8%	0.996
8	$v_2[t-1]=0$	$e_{34} \leq -4.385$	2.1%	/	96.7%	/	0.973
8	$v_2[t-1]=1$	$e_{34} \leq -4.365$	/	96.9%	/	2.9%	0.970
9	$v_2[t-1]=0$	$e_{51} \leq -6.005$	4.0%	/	96.6%	/	0.963
9	$v_2[t-1]=1$	$e_{51} \leq -6.025$	/	96.1%	/	3.3%	0.964
10	$v_2[t-1]=0$	$e_{52} \leq -6.025$	3.7%	/	96.8%	/	0.966
10	$v_2[t-1]=1$	$e_{52} \leq -6.025$	/	96.8%	/	3.5%	0.966
11	$v_2[t-1]=0$	$e_{53} \leq -5.895$	2.0%	/	98.7%	/	0.983
11	$v_2[t-1]=1$	$e_{53} \leq -5.955$	/	98.2%	/	1.3%	0.985
12	$v_2[t-1]=0$	$e_{54} \leq -6.005$	1.0%	/	97.9%	/	0.984
12	$v_2[t-1]=1$	$e_{54} \leq -5.965$	/	98.1%	/	1.0%	0.985
13	$v_2[t-1]=0$	$e_{55} \leq -5.915$	1.5%	/	98.5%	/	0.985
13	$v_2[t-1]=1$	$e_{55} \leq -5.955$	/	98.1%	/	0.8%	0.987
14	$v_2[t-1]=0$	$e_{40} \leq -4.995$	1.0%	/	99.5%	/	0.992
14	$v_2[t-1]=1$	$e_{40} \leq -5.035$	/	99.0%	/	0.5%	0.993
15	$v_2[t-1]=0$	$e_{41} \leq -5.195$	0%	/	100%	/	1
15	$v_2[t-1]=1$	$e_{41} \leq -5.18$	/	100%	/	0%	1
16	$v_2[t-1]=0$	$e_{42} \leq -5.27$	0%	/	100%	/	1
16	$v_2[t-1]=1$	$e_{42} \leq -5.265$	/	100%	/	0%	1

17	$v_2[t-1]=0$	$e_{43} \leq -5.29$	0%	/	100%	/	1
17	$v_2[t-1]=1$	$e_{43} \leq -5.265$	/	100%	/	0%	1
18	$v_2[t-1]=0$	$e_{44} \leq -5.225$	0%	/	100%	/	1
18	$v_2[t-1]=1$	$e_{44} \leq -5.21$	/	100%	/	0%	1
19	$v_2[t-1]=0$	$e_{45} \leq -5.145$	0%	/	100%	/	1
19	$v_2[t-1]=1$	$e_{45} \leq -5.18$	/	100%	/	0%	1
20	$v_2[t-1]=0$	$e_{46} \leq -5.155$	0%	/	100%	/	1
20	$v_2[t-1]=1$	$e_{46} \leq -5.145$	/	100%	/	0%	1
21	$v_2[t-1]=0$	$e_{47} \leq -5.205$	0%	/	100%	/	1
21	$v_2[t-1]=1$	$e_{47} \leq -5.145$	/	100%	/	0%	1
22	$v_2[t-1]=0$	$e_{48} \leq -5.155$	0%	/	100%	/	1
22	$v_2[t-1]=1$	$e_{48} \leq -5.185$	/	100%	/	0%	1
23	$v_2[t-1]=0$	$e_1 \leq -4.905$	0.1%	/	100%	/	0.999
23	$v_2[t-1]=1$	$e_1 \leq -4.93$	/	100%	/	0.1%	0.999
24	$v_2[t-1]=0$	$e_2 \leq -5.005$	0.1%	/	99.8%	/	0.998
24	$v_2[t-1]=1$	$e_2 \leq -5.015$	/	99.8%	/	0.1%	0.998
25	$v_2[t-1]=0$	$e_3 \leq -5.155$	0.1%	/	99.9%	/	0.999
25	$v_2[t-1]=1$	$e_3 \leq -5.165$	/	99.8%	/	0%	0.999
26	$v_2[t-1]=0$	$e_4 \leq -5.545$	0%	/	100%	/	1
26	$v_2[t-1]=1$	$e_4 \leq -5.58$	/	100%	/	0%	1
27	$v_2[t-1]=0$	$e_5 \leq -6.03$	0%	/	100%	/	1
27	$v_2[t-1]=1$	$e_5 \leq -6.155$	/	100%	/	0%	1
28	$v_2[t-1]=0$	$e_6 \leq -6.125$	0%	/	100%	/	1
28	$v_2[t-1]=1$	$e_6 \leq -6.105$	/	100%	/	0%	1
29	$v_2[t-1]=0$	$e_7 \leq -6.06$	0%	/	100%	/	1
29	$v_2[t-1]=1$	$e_7 \leq -6.125$	/	100%	/	0%	1
30	$v_2[t-1]=0$	$e_8 \leq -6.12$	0%	/	100%	/	1
30	$v_2[t-1]=1$	$e_8 \leq -6.14$	/	100%	/	0%	1
31	$v_2[t-1]=0$	$e_9 \leq -6.105$	0%	/	100%	/	1
31	$v_2[t-1]=1$	$e_9 \leq -6.12$	/	100%	/	0%	1
32	$v_2[t-1]=0$	$e_{58} \leq -5.205$	0%	/	100%	/	1
32	$v_2[t-1]=1$	$e_{58} \leq -5.165$	/	100%	/	0%	1
33	$v_2[t-1]=0$	$e_{59} \leq -5.175$	0%	/	100%	/	1
33	$v_2[t-1]=1$	$e_{59} \leq -5.175$	/	100%	/	0%	1
34	$v_2[t-1]=0$	$e_{60} \leq -5.12$	0%	/	100%	/	1
34	$v_2[t-1]=1$	$e_{60} \leq -5.10$	/	100%	/	0%	1
35	$v_2[t-1]=0$	$e_{61} \leq -5.215$	0%	/	100%	/	1
35	$v_2[t-1]=1$	$e_{61} \leq -5.195$	/	100%	/	0%	1
36	$v_2[t-1]=0$	$e_{62} \leq -5.19$	0%	/	100%	/	1
36	$v_2[t-1]=1$	$e_{62} \leq -5.19$	/	100%	/	0%	1
37	$v_2[t-1]=0$	$e_{63} \leq -5.155$	0%	/	100%	/	1
37	$v_2[t-1]=1$	$e_{63} \leq -5.15$	/	100%	/	0%	1
38	$v_2[t-1]=0$	$e_{16} \leq -5.71$	0%	/	100%	/	1
38	$v_2[t-1]=1$	$e_{16} \leq -5.695$	/	100%	/	0%	1
39	$v_2[t-1]=0$	$e_0 \leq -5.435$	0.9%	/	99.4%	/	0.993
39	$v_2[t-1]=1$	$e_0 \leq -5.445$	/	99.2%	/	0.8%	0.992
40	$v_2[t-1]=0$	$e_2 \leq -3.745$	2.3%	/	98.2%	/	0.979

40	$v_2[t-1]=1$	$e_2 \leq -3.765$	/	97.9%	/	1.8%	0.981
41	$v_2[t-1]=0$	$e_3 \leq -3.975$	0.5%	/	99.8%	/	0.997
41	$v_2[t-1]=1$	$e_3 \leq -3.965$	/	99.8%	/	0.3%	0.997
42	$v_2[t-1]=0$	$e_4 \leq -4.68$	0%	/	100%	/	1
42	$v_2[t-1]=1$	$e_4 \leq -4.74$	/	100%	/	0%	1
43	$v_2[t-1]=0$	$e_{21} \leq -5.535$	0%	/	100%	/	1
43	$v_2[t-1]=1$	$e_{21} \leq -5.525$	/	100%	/	0%	1
44	$v_2[t-1]=0$	$e_{22} \leq -5.335$	0%	/	100%	/	1
44	$v_2[t-1]=1$	$e_{22} \leq -5.27$	/	100%	/	0%	1
45	$v_2[t-1]=0$	$e_7 \leq -5.105$	0%	/	100%	/	1
45	$v_2[t-1]=1$	$e_7 \leq -5.13$	/	100%	/	0%	1
46	$v_2[t-1]=0$	$e_8 \leq -5.075$	0%	/	100%	/	1
46	$v_2[t-1]=1$	$e_8 \leq -5.115$	/	100%	/	0%	1
47	$v_2[t-1]=0$	$e_9 \leq -5.06$	0%	/	100%	/	1
47	$v_2[t-1]=1$	$e_9 \leq -5.03$	/	100%	/	0%	1
48	$v_2[t-1]=0$	$e_{10} \leq -5.21$	0%	/	100%	/	1
48	$v_2[t-1]=1$	$e_{10} \leq -5.175$	/	100%	/	0%	1
49	$v_2[t-1]=0$	$e_{11} \leq -5.18$	0%	/	100%	/	1
49	$v_2[t-1]=1$	$e_{11} \leq -5.185$	/	100%	/	0%	1
50	$v_2[t-1]=0$	$e_{12} \leq -5.18$	0%	/	100%	/	1
50	$v_2[t-1]=1$	$e_{12} \leq -5.165$	/	100%	/	0%	1
51	$v_2[t-1]=0$	$e_{13} \leq -5.205$	0%	/	100%	/	1
51	$v_2[t-1]=1$	$e_{13} \leq -5.175$	/	100%	/	0%	1
52	$v_2[t-1]=0$	$e_{14} \leq -5.21$	0%	/	100%	/	1
52	$v_2[t-1]=1$	$e_{14} \leq -5.21$	/	100%	/	0%	1
53	$v_2[t-1]=0$	$e_{15} \leq -5.215$	0%	/	99.9%	/	0.999
53	$v_2[t-1]=1$	$e_{15} \leq -5.20$	/	99.9%	/	0%	0.999
54	$v_2[t-1]=0$	$e_{32} \leq -6.045$	0.4%	/	99.9%	/	0.997
54	$v_2[t-1]=1$	$e_{32} \leq -6.085$	/	99.9%	/	0.4%	0.997
55	$v_2[t-1]=0$	$e_{17} \leq -4.645$	6.4%	/	96.0%	/	0.948
55	$v_2[t-1]=1$	$e_{17} \leq -4.655$	/	95.6%	/	5.3%	0.951
56	$v_2[t-1]=0$	$e_{18} \leq -4.645$	4.5%	/	95.8%	/	0.956
56	$v_2[t-1]=1$	$e_{18} \leq -4.635$	/	95.9%	/	4.6%	0.957
57	$v_2[t-1]=0$	$e_{18} \leq -6.625$	4.6%	/	97.1%	/	0.963
57	$v_2[t-1]=1$	$e_{18} \leq -6.655$	/	95.7%	/	3.9%	0.959
58	$v_2[t-1]=0$	$e_{19} \leq -6.615$	4.3%	/	96.7%	/	0.962
58	$v_2[t-1]=1$	$e_{19} \leq -6.595$	/	97.8%	/	4.4%	0.967
59	$v_2[t-1]=0$	$e_{37} \leq -4.965$	0.7%	/	99.6%	/	0.995
59	$v_2[t-1]=1$	$e_{37} \leq -5.105$	/	99.1%	/	0.3%	0.994
60	$v_2[t-1]=0$	$e_{37} \leq -7.16$	0%	/	100%	/	1
60	$v_2[t-1]=1$	$e_{37} \leq -7.145$	/	100%	/	0%	1
61	$v_2[t-1]=0$	$e_{38} \leq -7.075$	0%	/	100%	/	1
61	$v_2[t-1]=1$	$e_{38} \leq -7.03$	/	100%	/	0%	1
62	$v_2[t-1]=0$	$e_{39} \leq -6.77$	0%	/	99.9%	/	0.999
62	$v_2[t-1]=1$	$e_{39} \leq -6.765$	/	100%	/	0.1%	0.999
63	$v_2[t-1]=0$	$e_{17} \leq -8.195$	49.0%	/	47.0%	/	0.510
63	$v_2[t-1]=1$	$e_{17} \leq -8.145$	/	56.2%	/	57.8%	0.508