Appendix A. Individual risk index of local government debt.

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Anhui	0.5414	0.5338	0.6352	0.6352	0.6754	1.0515	0.9673	1.1501	1.0219
Beijing	0.3468	0.4004	0.4406	0.4406	0.6029	1.0075	1.0198	0.8586	0.9242
Chongqing	0.5414	0.5414	0.6754	0.7156	0.9232	1.0075	1.3396	1.2711	0.9458
Fujian	0.4476	0.4476	0.5816	0.5414	0.6352	1.0477	1.2186	1.1099	0.8654
Gansu	0.5414	0.6352	0.7376	0.6352	0.7562	0.9868	1.0452	1.0452	1.0414
Guangdong	0.3118	0.3468	0.3066	0.4406	0.4004	0.6218	0.8649	0.7964	0.7562
Guangxi	0.5414	0.5816	0.5414	0.6352	0.8547	1.0477	1.1501	1.1941	1.1539
Guizhou	0.5414	0.4936	0.5414	0.6352	0.8547	1.0138	1.2774	1.2711	1.1831
Hainan	0.4586	0.5816	0.3758	0.5414	0.5414	0.6792	0.9453	0.8649	1.1285
Hebei	0.4476	0.5414	0.5414	0.5414	0.6792	0.8683	0.8649	0.9026	0.9868
Heilongjiang	0.5816	0.5414	0.5414	0.5854	0.7194	0.8806	1.0917	0.9428	1.049
Henan	0.4476	0.5414	0.5414	0.5414	0.6352	0.8281	1.0477	1.1099	0.9534
Hubei	0.5414	0.5414	0.5414	0.6352	0.8145	0.8865	1.0075	0.8988	0.9936
Hunan	0.5414	0.4936	0.6352	0.6352	0.8145	1.0515	1.2372	1.2711	1.1624
Inner Mongolia	0.5414	0.5816	0.5816	0.5854	0.6792	0.9491	1.2004	1.1357	1.005
Jiangsu	0.4004	0.4406	0.4004	0.6735	0.7822	0.9752	1.1178	1.0091	1.2309
Jiangxi	0.5414	0.5414	0.5414	0.6352	0.6352	0.9089	1.0477	1.0477	1.1099
Jilin	0.5414	0.5414	0.5414	0.5414	0.7194	0.9893	1.0917	1.0917	1.049
Liaoning	0.4476	0.4476	0.5414	0.5816	0.8585	1.0176	1.2664	1.2347	1.126
Ningxia	0.6352	0.4458	0.416	0.5414	0.6792	0.9491	1.0477	1.0075	1.1137

Qinghai	0.7156	0.5874	0.7778	0.7376	0.8586	1.0854	1.3151	1.2347	1.126
Shananxi	0.5414	0.5414	0.6218	0.6754	0.6352	1.0515	1.1501	1.1099	0.961
Shandong	0.4528	0.4476	0.4878	0.5816	0.7207	0.8281	1.0138	1.0515	0.9868
Shanghai	0.3066	0.3066	0.3506	0.4004	0.4004	0.4846	0.7239	0.6478	0.7008
Shanxi	0.4878	0.5414	0.5414	0.5854	0.7647	0.7596	0.9893	0.8108	0.9026
Sichuan	0.5414	0.4936	0.5414	0.6352	0.6352	1.0515	1.0477	1.1099	0.9534
Tianjin	0.5414	0.5414	0.4004	0.7841	1.0442	1.0515	1.3798	1.126	1.2787
Xinjiang	0.5414	0.6218	0.5414	0.6352	0.8145	1.0917	1.0917	1.0697	0.9056
Yunnan	0.5414	0.5338	0.5816	0.6352	0.6754	1.0113	1.2711	1.2711	1.0266
Zhejiang	0.3066	0.4004	0.4004	0.6199	0.7577	1.0578	1.0760	0.9673	0.9597

Appendix B. Contagion risk index of local government debt.

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Anhui	1.7148	1.1846	1.7148	1.7148	1.9998	1.7148	1.7148	1.7148	1.9998
Beijing	0.9999	0.9999	0.7149	1.3849	0.9999	0.9999	0.9999	0.9999	1.2699
Chongqing	1.2849	1.2849	1.2849	1.2849	1.3849	1.2849	1.2849	0.8848	0.8698
Fujian	0.7149	0.7149	0.7149	0.7149	0.7149	0.7149	0.7149	0.7149	0.5848
Gansu	0.5700	0.2850	0.0000	0.0000	0.5700	0.0000	0.0000	0.0000	0.0000
Guangdong	1.2849	1.2849	1.2849	1.2849	1.4000	1.2849	1.2849	1.2849	1.1548
Guangxi	0.2850	0.2850	0.2850	0.2850	0.2850	0.2850	0.2850	0.2850	0.2850
Guizhou	0.2850	0.2850	0.9999	0.4151	0.8848	0.9999	0.9999	1.6301	1.3451

Hainan	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hebei	1.9998	1.9998	1.9998	1.7148	1.3451	1.7148	1.7148	1.9998	1.9998
Heilongjiang	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Henan	1.9998	1.9998	1.7148	1.7148	1.9998	1.9998	1.9998	1.9998	1.9998
Hubei	1.7148	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998
Hunan	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998
Inner Mongolia	0.7149	0.7149	0.9999	0.9999	0.9999	0.9999	0.9999	0.6547	0.8698
Jiangsu	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998	1.9998	1.7148
Jiangxi	0.7149	1.7148	0.7149	0.7149	0.9999	0.9999	0.7149	1.3696	0.9849
Jilin	0.2850	0.2850	0.2850	0.2850	0.0000	0.2850	0.2850	0.0000	0.0000
Liaoning	1.2849	1.1849	1.1849	1.2849	0.8999	1.0548	1.1849	0.8001	0.5700
Ningxia	0.3697	0.6547	0.2850	0.3697	0.0000	0.0000	0.0000	0.2850	0.2850
Qinghai	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Shananxi	1.6301	1.6301	1.6301	1.9998	1.9998	1.9998	1.6301	1.9998	1.9998
Shandong	1.7148	1.9998	1.9998	1.9998	1.7148	1.9998	1.9998	1.9998	1.9998
Shanghai	1.0846	0.7149	1.0846	0.7149	1.0846	0.7149	1.0846	0.7149	1.0696
Shanxi	1.1150	0.7149	1.0999	1.0999	0.7149	0.7149	0.9999	1.7148	1.3451
Sichuan	0.5151	0.5151	0.3850	0.3850	0.2850	0.5151	0.3850	0.8848	0.8698
Tianjin	1.9998	1.7148	1.9998	1.9998	1.9998	1.9998	1.9998	0.9999	0.8698
Xinjiang	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Yunnan	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Zhejiang	1.7148	1.7148	1.7148	1.7148	1.7148	1.7148	1.7148	0.7149	1.0696

Appendix C. The MS-AR estimation of the proxy variable I.

Province	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
Anhui	Regime 1	ut(st=1)	1.157393***	0.11558	10.01375
	Regime 2	ut(st=2)	1.453296***	0.094087	15.44625
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.837211	0.162789
			Regime 2	0.116663	0.883337
	Duration	Regime 1	6.142937	Regime 2	8.571709
Beijing	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.696579***	0.071488	9.743927
	Regime 2	ut(st=2)	0.98592***	0.050255	19.61821
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.823793	0.176207
			Regime 2	0.114554	0.885446
	Duration	Regime 1	5.675128	Regime 2	8.729486
Chongqing	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.223327***	0.049092	24.91917
	Regime 2	ut(st=2)	0.997505***	0.034092	29.25894
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.60986	0.39014
			Regime 2	0.153001	0.846999
	Duration	Regime 1	2.563184	Regime 2	6.535899

Fujian	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.649163***	0.020813	31.19028
	Regime 2	ut(st=2)	0.884317***	0.029434	30.04372
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.847597	0.152403
			Regime 2	0.390387	0.609613
	Duration	Regime 1	6.561552	Regime 2	2.561563
Gansu	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.387498***	0.040205	9.638136
	Regime 2	ut(st=2)	0.599786***	0.081569	7.353069
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.741958	0.258042
			Regime 2	1	4.58E-11
	Duration	Regime 1	3.875334	Regime 2	1
Guangdong	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.905569***	0.038155	23.7338
	Regime 2	ut(st=2)	1.03859***	0.033352	31.14017
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.866942	0.133058
			Regime 2	0.127962	0.872038
	Duration	Regime 1	7.515496	Regime 2	7.814832

Guangxi	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.418364***	0.042643	9.81086
	Regime 2	ut(st=2)	0.624394***	0.043815	14.25082
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.875676	0.124324
			Regime 2	0.125634	0.874366
	Duration	Regime 1	8.043509	Regime 2	7.95966
Guizhou	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.570686***	0.171789	3.322009
	Regime 2	ut(st=2)	1.187924***	0.169441	7.010843
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.874699	0.125301
			Regime 2	0.129942	0.870058
	Duration	Regime 1	7.980809	Regime 2	7.695742
Hainan	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.218208***	0.026031	8.38253
	Regime 2	ut(st=2)	0.402697	0.038419	10.4818
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.891794	0.108206
			Regime 2	0.163531	0.836469
	Duration	Regime 1	9.241649	Regime 2	6.115066

Hebei	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.147046***	0.135858	8.442983
	Regime 2	ut(st=2)	1.423164***	0.059313	23.99406
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.390151	0.609849
			Regime 2	0.139033	0.860967
	Duration	Regime 1	1.639749	Regime 2	7.192561
Heilongjiang	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.245068***	0.020718	11.82877
	Regime 2	ut(st=2)	0.408864***	0.023269	17.57138
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.882269	0.117731
			Regime 2	0.134506	0.865494
	Duration	Regime 1	8.493959	Regime 2	7.434587
Henan	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.323007***	0.057504	23.00705
	Regime 2	ut(st=2)	1.568157***	0.059863	26.19574
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.875915	0.124085
			Regime 2	0.128218	0.871782
	Duration	Regime 1	8.058966	Regime 2	7.799226

Hubei	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.361452***	0.053316	25.53563
	Regime 2	ut(st=2)	1.547269***	0.045331	34.13236
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.857783	0.142217
			Regime 2	0.115064	0.884936
	Duration	Regime 1	7.031497	Regime 2	8.690811
Hunan	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.661422***	0.031248	53.16811
	Regime 2	ut(st=2)	1.431891***	0.027722	51.65102
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.86559	0.13441
			Regime 2	0.11776	0.88224
	Duration	Regime 1	7.439931	Regime 2	8.49182
Inner Mongolia	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.913277***	0.054235	16.83917
	Regime 2	ut(st=2)	0.67956***	0.1491	4.557751
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.892821	0.107179
			Regime 2	0.208285	0.791715
	Duration	Regime 1	9.330214	Regime 2	4.801119

Jiangsu	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.366675***	0.049822	27.43142
	Regime 2	ut(st=2)	1.55693***	0.039458	39.45765
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.858439	0.141561
			Regime 2	0.114873	0.885127
	Duration	Regime 1	7.064071	Regime 2	8.705297
Jiangxi	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.760428***	0.127867	5.947043
	Regime 2	ut(st=2)	1.130938***	0.147487	7.66804
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.541621	0.458379
			Regime 2	0.724441	0.275559
	Duration	Regime 1	2.1816	Regime 2	1.380375
Jilin	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.596603***	0.043788	13.62479
	Regime 2	ut(st=2)	0.391929***	0.023235	16.86794
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.454799	0.545201
			Regime 2	0.137752	0.862248
	Duration	Regime 1	1.834186	Regime 2	7.259424

Liaoning	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.218289***	0.101374	12.01783
	Regime 2	ut(st=2)	0.929403***	0.03565	26.06993
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	4.78E-11	1
			Regime 2	0.128747	0.871253
	Duration	Regime 1	1	Regime 2	7.767146
Ningxia	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.38042***	0.047147	8.068831
	Regime 2	ut(st=2)	0.563751***	0.058345	9.662299
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.715778	0.284222
			Regime 2	0.283452	0.716548
	Duration	Regime 1	3.518377	Regime 2	3.527934
Qinghai	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.491154***	0.027877	17.61832
	Regime 2	ut(st=2)	0.303502***	0.024874	12.20174
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.865456	0.134544
			Regime 2	0.117703	0.882297
	Duration	Regime 1	7.432497	Regime 2	8.495967

Shananxi	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.522336***	0.042367	35.93217
	Regime 2	ut(st=2)	1.191977***	0.060089	19.83679
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.892071	0.107929
			Regime 2	0.165053	0.834947
	Duration	Regime 1	9.26532	Regime 2	6.058657
Shandong	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.330237***	0.042378	31.38973
	Regime 2	ut(st=2)	1.574992***	0.046924	33.56501
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.882059	0.117941
			Regime 2	0.135516	0.864484
	Duration	Regime 1	8.478849	Regime 2	7.379207
Shanghai	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.840114***	0.042754	19.65006
	Regime 2	ut(st=2)	0.609643***	0.0478	12.75399
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	1.28E-10	1.00E+00
			Regime 2	1.00E+00	5.54E-11
	Duration	Regime 1	1	Regime 2	1

Shanxi	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.808056***	0.070437	11.47198
	Regime 2	ut(st=2)	1.214087***	0.14502	8.37184
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.895266	0.104734
			Regime 2	0.203091	0.796909
	Duration	Regime 1	9.54802	Regime 2	4.923911
Sichuan	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.822291***	0.073156	11.2402
	Regime 2	ut(st=2)	0.484489***	0.068241	7.099664
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.857984	0.142016
			Regime 2	0.120401	0.879599
	Duration	Regime 1	7.041481	Regime 2	8.305613
Tianjin	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.201257***	0.122881	9.775766
	Regime 2	ut(st=2)	1.589012***	0.134714	11.79548
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.759197	0.240803
			Regime 2	0.314114	0.685886
	Duration	Regime 1	4.152773	Regime 2	3.183557

Xinjiang	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.417916***	0.033485	12.48058
	Regime 2	ut(st=2)	0.251107***	0.034487	7.281126
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.875442	0.124558
			Regime 2	0.12588	0.87412
	Duration	Regime 1	8.028378	Regime 2	7.94407
Yunnan	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	0.472552***	0.028925	16.33732
	Regime 2	ut(st=2)	0.244937***	0.025876	9.46575
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.865421	0.134579
			Regime 2	0.117679	0.882321
	Duration	Regime 1	7.430553	Regime 2	8.497725
Zhejiang	Regime	Parameter	The Proxy Variable I		
			Coefficient	Std. Error	z-Statistic
	Regime 1	ut(st=1)	1.279334***	0.071475	17.89902
	Regime 2	ut(st=2)	0.930965***	0.147304	6.32003
				Regime 1	Regime 2
	Constant Transition Probabilities		Regime 1	0.881249	0.118751
			Regime 2	0.278032	0.721968
	Duration	Regime 1	8.420989	Regime 2	3.596706

Regime 1 represents the high-risk state, Regime 2 represents the low-risk state. *** indicates marginal significance at the 1%-level, ** at the 5% -level, and * at the 10% -level. The sample period is 2010~2018. In addition, this paper has tried three regimes and four regimes, but the results show that some standard error of parameters are very large in the three regimes and four regimes. Thus, this paper finally selects the two regimes.

Appendix D. Sensitivity analysis.

	Average of The Proxy Variable I	Average of Individual Risk Index	Average of Contagion Risk Index	Steady-state Probability of Low-risk State	Steady-state Probability of High-risk State	Duration of Low-risk State	Duration of High-risk State	The Proxy Variable II	Risk Ranking
Anhui	1.2987	0.9177	1.6797	0.8402	0.8848	6.2584	8.6775	3.0582	7
Beijing	0.9235	0.7922	1.0548	0.8905	0.8323	9.1326	5.9629	2.8445	15
Chongqing	1.1071	0.9693	1.2450	0.5704	0.8471	2.3276	6.5385	2.0432	22
Fujian	0.7633	0.8680	0.6587	0.6096	0.8476	2.5616	6.5616	1.9195	25
Gansu	0.5902	0.9953	0.1852	0.8597	0.4766	7.1298	1.9107	1.7045	28
Guangdong	1.0079	0.6746	1.3413	0.8662	0.8811	7.4722	8.4093	3.0526	8
Guangxi	0.6572	0.9812	0.3333	0.8823	0.8654	8.4941	7.4283	2.8547	14
Guizhou	0.9092	0.9441	0.8743	0.8657	0.8804	7.4433	8.3620	2.9825	10
Hainan	0.3858	0.7717	0.0000	0.8627	0.8822	7.2825	8.4897	2.7307	19
Hebei	1.3397	0.8679	1.8116	0.7648	0.8960	4.2519	9.6196	2.9450	11
Heilongjiang	0.4722	0.9445	0.0000	0.8809	0.8677	8.3930	7.5602	2.7727	18
Henan	1.3937	0.8614	1.9259	0.8750	0.8740	8.0027	7.9335	3.2323	3
Hubei	1.4167	0.8703	1.9630	0.8802	0.8642	8.3445	7.3625	3.1991	5
Hunan	1.4874	0.9748	2.0000	0.8655	0.8824	7.4352	8.5036	3.2860	1
Inner Mongolia	0.9296	0.9751	0.8842	0.8595	0.8837	7.1173	8.5948	2.9829	9
Jiangsu	1.4379	0.9128	1.9630	0.8658	0.8818	7.4494	8.4623	3.2594	2
Jiangxi	0.9428	0.9113	0.9743	0.4454	0.3169	1.8030	1.4640	1.0034	29

Jilin	0.5877	0.9532	0.2222	0.8651	0.8821	7.4138	8.4828	2.8400	16
Liaoning	1.0452	0.9814	1.1090	0.8565	0.5363	6.9688	2.1566	1.9520	24
Ningxia	0.5652	0.8612	0.2691	0.8953	0.7679	9.5527	4.3080	2.4542	20
Qinghai	0.5454	1.0908	0.0000	0.8823	0.8655	8.4927	7.4347	2.7967	17
Shananxi	1.3932	0.9476	1.8388	0.8918	0.8354	9.2429	6.0760	3.1024	6
Shandong	1.3893	0.8527	1.9259	0.8822	0.8653	8.4916	7.4221	3.2166	4
Shanghai	0.7449	0.6135	0.8763	0.0000	0.0000	1.0000	1.0000	0.6382	30
Shanxi	0.9361	0.8400	1.0323	0.8921	0.8331	9.2709	5.9933	2.8731	13
Sichuan	0.7174	0.8946	0.5401	0.8652	0.8822	7.4200	8.4881	2.9074	12
Tianjin	1.3868	1.0408	1.7327	0.8275	0.6751	5.7983	3.0783	2.1162	21
Xinjiang	0.4590	0.9180	0.0000	0.6096	0.8476	2.5614	6.5616	1.7686	26
Yunnan	0.4668	0.9335	0.0000	0.8492	0.6306	6.6332	2.7069	1.7230	27
Zhejiang	1.1672	0.8416	1.4928	0.8494	0.5895	6.6418	2.4359	2.0222	23

Appendix E. The proxy variable II during 2010~2016.

	Average of The Proxy Variable I	Average of Individual Risk Index	Average of Contagion Risk Index	Steady-state Probability of Low-risk State	Steady-state Probability of High-risk State	Duration of Low-risk State	Duration of High-risk State	The Proxy Variable II	Risk Ranking
Anhui	1.2837	0.7200	1.6798	0.8246	0.0000	5.7012	1.0000	1.5420	23
Beijing	0.8467	0.6084	1.0142	0.8362	0.8039	6.1048	5.0992	2.2619	12
Chongqing	1.1017	0.8206	1.2992	0.8149	0.8460	5.4029	6.4920	2.5239	7
Fujian	0.7099	0.7028	0.7149	0.8602	0.7407	7.1555	3.8558	2.1099	15
Gansu	0.4342	0.7625	0.2036	0.6336	0.0000	2.7289	1.0000	0.7666	28
Guangdong	0.9584	0.4704	1.3013	0.8033	0.8495	5.0834	6.6456	2.4569	9
Guangxi	0.4829	0.7646	0.2850	0.8468	0.8133	6.5281	5.3552	2.2010	13

Guizhou	0.7244	0.7654	0.6957	0.4123	0.5600	1.7015	2.2730	1.0532	26
Hainan	0.2431	0.5890	0.0000	0.8517	0.0000	6.7418	1.0000	1.2302	24
Hebei	1.3122	0.6406	1.7841	0.8246	0.0000	5.7016	1.0000	1.5568	21
Heilongjiang	0.2913	0.7059	0.0000	0.7416	0.8602	3.8694	7.1519	2.0865	18
Henan	1.3968	0.6547	1.9184	0.7819	0.8430	4.5856	6.3697	2.5264	6
Hubei	1.4435	0.7097	1.9591	0.8242	0.8299	5.6881	5.8803	2.6042	4
Hunan	1.4934	0.7727	1.9998	0.8599	0.7461	7.1365	3.9385	2.4615	8
Inner Mongolia	0.8412	0.7312	0.9185	0.8070	0.8361	5.1825	6.1001	2.3140	11
Jiangsu	1.4569	0.6843	1.9998	0.8220	0.8414	5.6166	6.3054	2.6775	1
Jiangxi	0.8376	0.6930	0.9392	0.7641	0.0000	4.2384	1.0000	1.1536	25
Jilin	0.4363	0.7094	0.2443	0.8602	0.7407	7.1540	3.8560	1.9905	19
Liaoning	0.9821	0.7372	1.1542	0.8517	0.0000	6.7413	1.0000	1.5472	22
Ningxia	0.4188	0.6735	0.2399	0.5345	0.0000	2.1483	1.0000	0.6762	29
Qinghai	0.3583	0.8682	0.0000	0.7407	0.8603	3.8564	7.1558	2.1098	16
Shananxi	1.3580	0.7453	1.7885	0.8150	0.8460	5.4040	6.4954	2.6384	3
Shandong	1.3939	0.6475	1.9184	0.8557	0.7259	6.9302	3.6480	2.3408	10
Shanghai	0.7192	0.4247	0.9262	0.0000	0.0000	1.0000	1.0000	0.6031	30
Shanxi	0.8172	0.6671	0.9228	0.3958	0.2893	1.6552	1.4071	0.8908	27
Sichuan	0.5421	0.7066	0.4265	0.7407	0.8602	3.8559	7.1554	2.1943	14
Tianjin	1.4892	0.8204	1.9591	0.8368	0.8265	6.1284	5.7641	2.6581	2
Xinjiang	0.3147	0.7625	0.0000	0.8597	0.7488	7.1278	3.9809	1.9558	20
Yunnan	0.3095	0.7500	0.0000	0.7406	0.8602	3.8557	7.1554	2.0919	17
Zhejiang	1.2794	0.6598	1.7148	0.8086	0.8485	5.2244	6.5993	2.6014	5

Appendix F. The proxy variable II during 2010~2017.

	Average of The Proxy Variable I	Average of Individual Risk Index	Average of Contagion Risk Index	Steady-state Probability of Low-risk State	Steady-state Probability of High-risk State	Duration of Low-risk State	Duration of High-risk State	The Proxy Variable II	Risk Ranking
Anhui	1.3084	0.7737	1.6842	0.8516	0.0000	6.7405	1.0000	2.0257	21
Beijing	0.8586	0.6397	1.0124	0.8200	0.8693	5.5559	7.6485	2.8141	11
Chongqing	1.0945	0.8769	1.2474	0.8146	0.6024	5.3923	2.5154	2.0136	22
Fujian	0.7309	0.7537	0.7149	0.8735	0.8261	7.9081	5.7501	2.8876	8
Gansu	0.4339	0.7979	0.1781	0.6938	0.0000	3.2660	1.0000	1.0030	27
Guangdong	0.9740	0.5112	1.2993	0.8648	0.8460	7.3981	6.4952	3.0222	7
Guangxi	0.5051	0.8183	0.2850	0.8498	0.8632	6.6597	7.3094	2.8144	10
Guizhou	0.8191	0.8286	0.8125	0.8360	0.8623	6.0975	7.2613	2.8315	9
Hainan	0.2573	0.6235	0.0000	0.7783	0.8801	4.5109	8.3419	2.4800	18
Hebei	1.3415	0.6734	1.8111	0.8420	0.3714	6.3274	1.5909	2.1147	20
Heilongjiang	0.3036	0.7355	0.0000	0.8267	0.8734	5.7698	7.8988	2.6620	17
Henan	1.4263	0.7116	1.9286	0.8375	0.8667	6.1556	7.4990	3.1363	5
Hubei	1.4562	0.7333	1.9642	0.8634	0.8432	7.3223	6.3774	3.1832	2
Hunan	1.5191	0.8350	1.9998	0.8265	0.8734	5.7637	7.8999	3.1633	3
Inner Mongolia	0.8427	0.7818	0.8855	0.8617	0.8008	7.2283	5.0211	2.6861	15
Jiangsu	1.4736	0.7249	1.9998	0.8581	0.8558	7.0451	6.9340	3.2299	1
Jiangxi	0.8875	0.7374	0.9930	0.0000	0.5277	1.0000	2.1172	0.9510	28
Jilin	0.4380	0.7572	0.2138	0.8382	0.4510	6.1788	1.8214	1.7582	26
Liaoning	0.9818	0.7994	1.1099	0.8517	0.0000	6.7415	1.0000	1.8896	25
Ningxia	0.4394	0.7152	0.2455	0.0000	0.0000	1.0000	1.0000	0.5081	30

Qinghai	0.3772	0.9140	0.0000	0.8736	0.8262	7.9110	5.7522	2.7374	12
Shananxi	1.3923	0.7908	1.8150	0.8736	0.8261	7.9087	5.7515	3.1616	4
Shandong	1.4207	0.6980	1.9286	0.8233	0.8728	5.6579	7.8609	3.0998	6
Shanghai	0.7152	0.4526	0.8998	0.0000	0.0000	1.0000	1.0000	0.6295	29
Shanxi	0.8828	0.6851	1.0218	0.0000	0.8713	1.0000	7.7719	1.9069	24
Sichuan	0.5965	0.7570	0.4838	0.8174	0.8703	5.4773	7.7119	2.6978	14
Tianjin	1.4345	0.8586	1.8392	0.6643	0.7361	2.9792	3.7898	1.9168	23
Xinjiang	0.3305	0.8009	0.0000	0.8728	0.8286	7.8645	5.8348	2.7259	13
Yunnan	0.3364	0.8151	0.0000	0.8261	0.8736	5.7505	7.9086	2.6716	16
Zhejiang	1.2219	0.6983	1.5898	0.8697	0.0000	7.6764	1.0000	2.1664	19