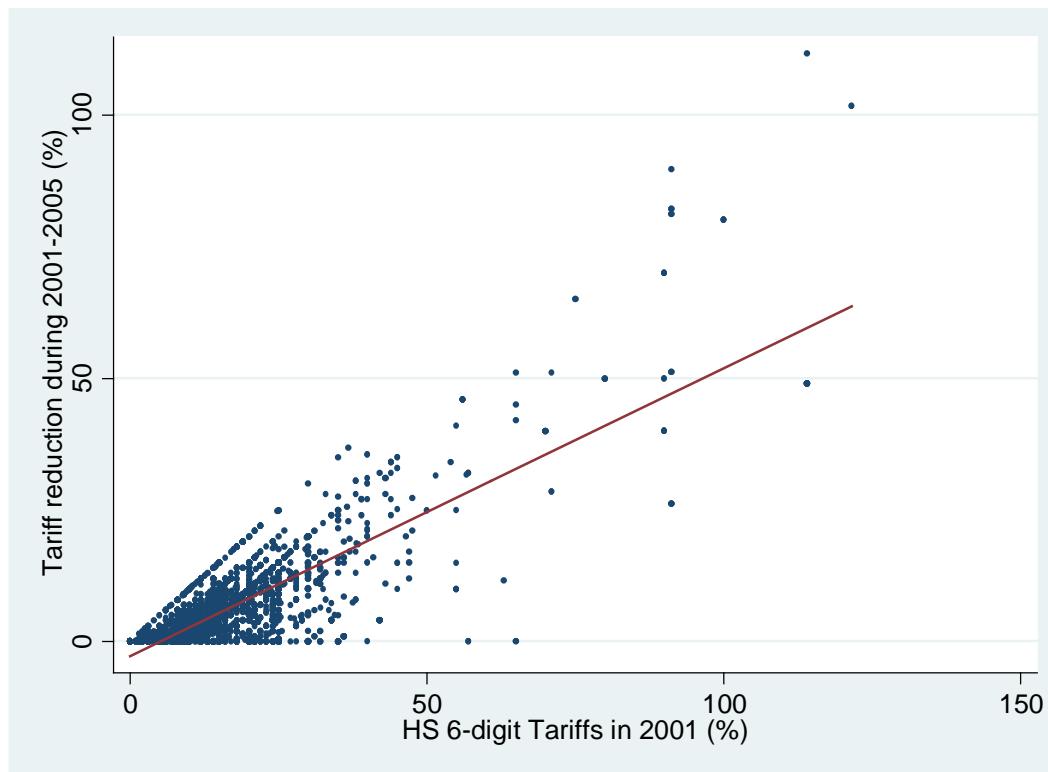


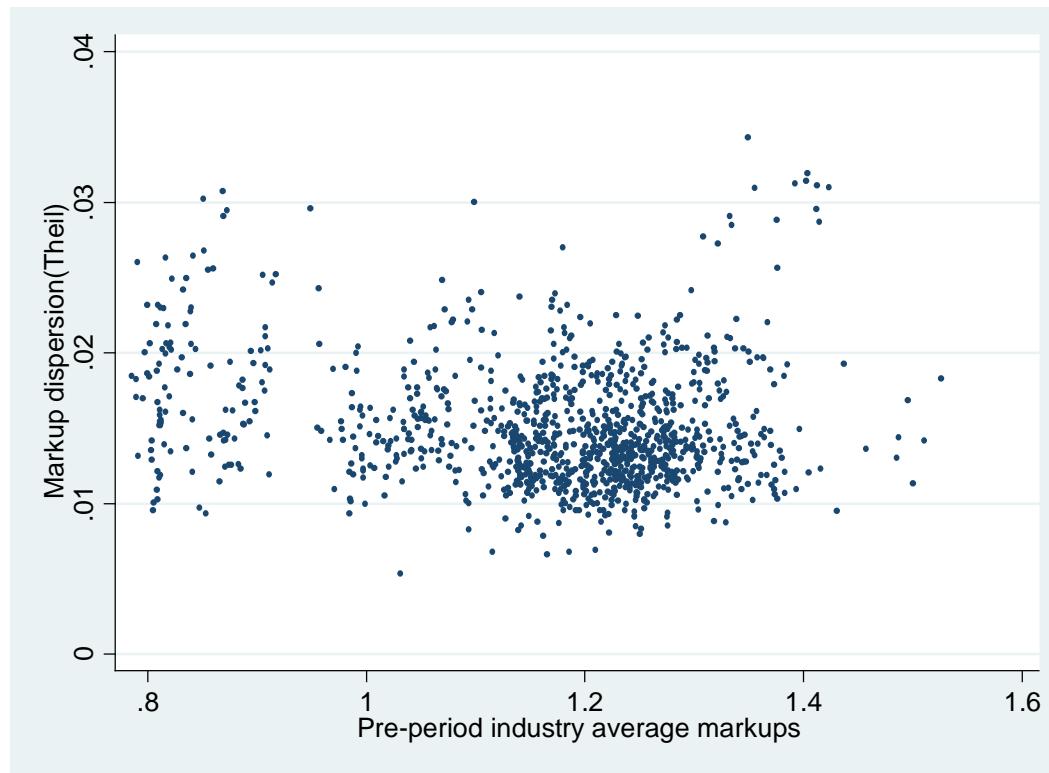
Trade Liberalization and Markup Dispersion: Evidence from China's WTO Accession  
Yi Lu and Linhui Yu

**Online Appendix**

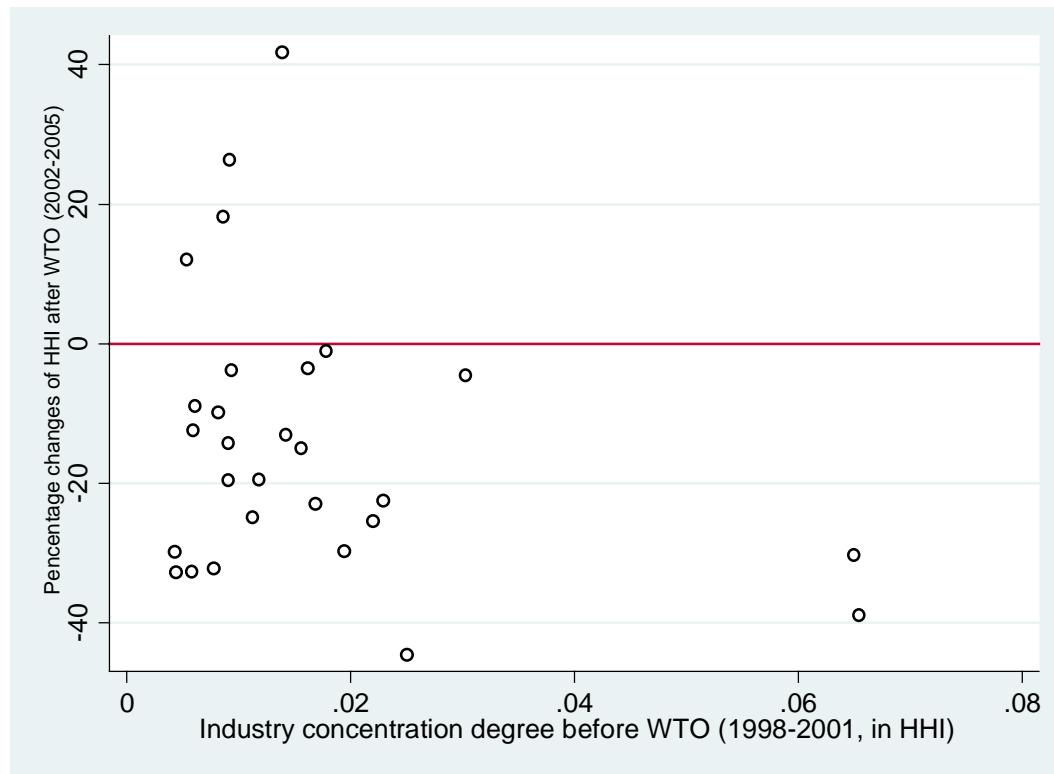
Appendix Figure 1: Correlation between tariffs in 2001 and tariff changes during 2001-2005 at the HS-6 product level



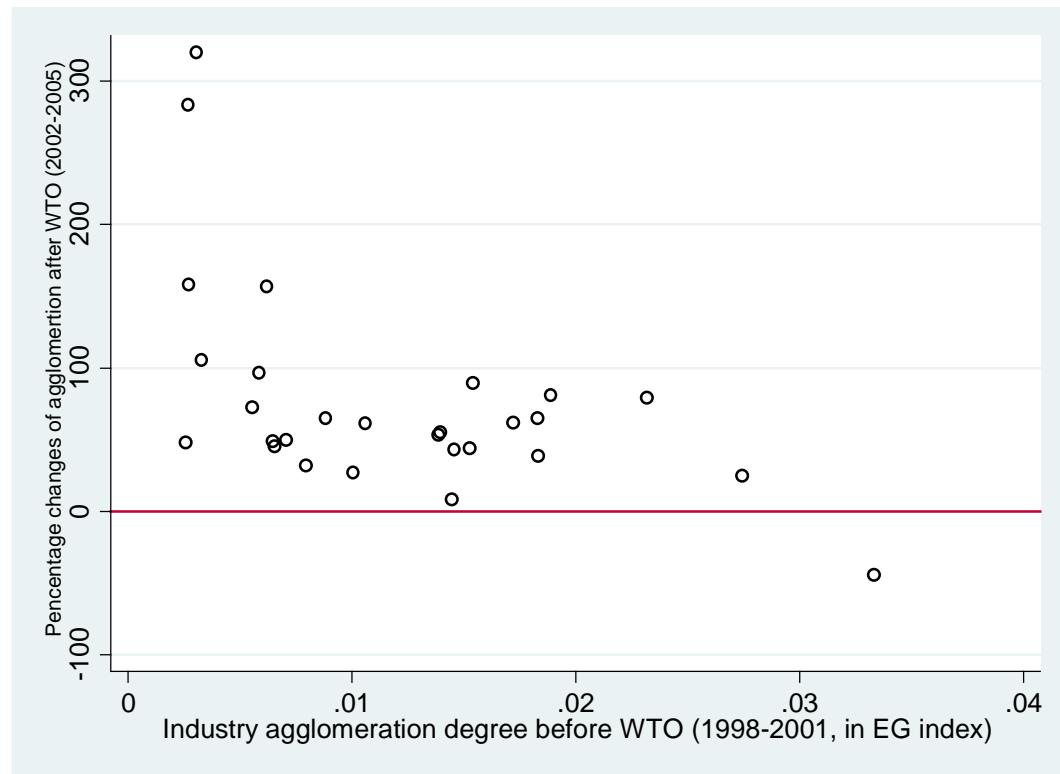
Appendix Figure 2: Correlation between pre-period markup level and markup dispersion at the 3-digit CIC industry level



Appendix Figure 3: Industry concentration degrees (HHI) and their changes after WTO accession



Appendix Figure 4: Industry agglomeration degrees (EG index) and their changes after WTO accession



Appendix Table 1: Additional Robustness Checks

	(1)	(2)	(3)	(4)
Dependent variable: markup dispersion (in log)	Theil			MLD
Tariff <sub>1997~2001</sub> *Post <sub>2002</sub>	-0.312*** (0.102)			
Tariff <sub>1997</sub> * Post <sub>2002</sub>		-0.284*** (0.102)		
Tariff rates			0.283 (0.211)	
Tariff <sub>2001</sub> *Post <sub>2002</sub>				-0.305*** (0.097)
Industry fixed effect	X	X	X	X
Year fixed effect	X	X	X	X
Time-varying industry characteristics	X	X	X	X
Interactions between Post02 and significant determinants	X	X	X	X
Observations	1,232	1,232	1,232	1,232
R-squared	0.365	0.364	0.357	0.375
Number of sic3	154	154	154	154

Note: Standard errors, clustered at 3-digit industry level, are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Appendix Table 2: Determinants of tariffs in 2001

Dependent variable: Tariffs in 2001	(1)	(2)	(3)	(4)	(5)	(6)	(7)
output share of SOEs (2001)	0.081 (0.100)	0.249* (0.138)	0.433*** (0.165)	0.432*** (0.164)	0.436*** (0.167)	0.434*** (0.166)	0.436*** (0.167)
output share of other domestic firms (2001)	-0.163** (0.078)	-0.120 (0.079)	0.070 (0.105)	0.070 (0.106)	0.065 (0.108)	0.070 (0.106)	0.066 (0.108)
Log total employment (2001)	-0.001 (0.009)	-0.021 (0.020)	-0.033 (0.022)	-0.032 (0.022)	-0.034 (0.022)	-0.033 (0.022)	-0.034 (0.022)
employment growth rate (98-01)	0.015 (0.056)	-0.001 (0.063)	0.004 (0.061)	0.003 (0.062)	0.003 (0.061)	0.004 (0.062)	0.003 (0.061)
Log average wage per worker (2001)		0.027 (0.020)	0.039* (0.023)	0.039* (0.023)	0.040* (0.022)	0.039* (0.023)	0.040* (0.022)
capital-labor ratio (2001)		-0.030* (0.015)	-0.006 (0.021)	-0.007 (0.021)	-0.004 (0.021)	-0.005 (0.021)	-0.004 (0.021)
value added ratio (2001)		-0.049 (0.084)	-0.051 (0.083)	-0.054 (0.086)	-0.044 (0.087)	-0.049 (0.086)	-0.044 (0.087)
industry age (2001)		-0.042 (0.039)	-0.023 (0.041)	-0.023 (0.042)	-0.024 (0.042)	-0.023 (0.042)	-0.025 (0.042)
Export intensity (2001)			0.212** (0.101)	0.207** (0.096)	0.224** (0.096)	0.216** (0.096)	0.223** (0.096)
Theil				0.496 (1.781)			
Gini					-0.319 (0.572)		
CV						-0.048 (0.229)	
RMD							-0.446 (0.812)
Observations	157	157	157	157	157	157	157
R-squared	0.085	0.116	0.136	0.137	0.138	0.136	0.138

Robust Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1;

Appendix Table 3: Output elasticities of inputs

Industry	M					L					K				
	P5	P25	P50	P75	P95	P5	P25	P50	P75	P95	P5	P25	P50	P75	P95
Processing of Food from Agricultural Products	0.633	0.700	0.742	0.782	0.844	0.018	0.055	0.083	0.111	0.171	0.000	0.029	0.049	0.070	0.111
Manufacture of Foods	0.456	0.516	0.554	0.590	0.649	0.319	0.376	0.410	0.443	0.492	0.035	0.074	0.103	0.136	0.206
Manufacture of Beverages	0.684	0.783	0.841	0.898	0.979	-0.121	-0.050	-0.002	0.050	0.169	0.018	0.049	0.071	0.091	0.120
Textiles	0.749	0.844	0.901	0.963	1.057	0.014	0.071	0.110	0.147	0.209	0.010	0.012	0.014	0.019	0.029
Garment, Foot Ware, and Caps	0.475	0.540	0.584	0.627	0.705	0.057	0.157	0.214	0.265	0.347	0.189	0.239	0.271	0.302	0.347
Leather, Fur, Feathers, and Related Products	0.682	0.818	0.892	0.975	1.116	0.050	0.162	0.229	0.293	0.398	0.016	0.045	0.063	0.077	0.102
Timber, Manufacture of Wood, Bamboo, Rattan, Palm, and Straw Products	0.597	0.622	0.637	0.653	0.683	0.243	0.269	0.286	0.306	0.343	0.102	0.131	0.149	0.168	0.197
Furniture	0.578	0.760	0.875	0.986	1.161	0.543	0.791	0.961	1.123	1.349	0.057	0.176	0.254	0.328	0.418
Paper and Paper Products	0.873	0.970	1.026	1.087	1.177	-0.030	0.000	0.013	0.025	0.046	-0.023	-0.002	0.009	0.020	0.041
Printing, Reproduction of Recording Media	0.814	0.883	0.927	0.961	1.008	0.024	0.048	0.067	0.094	0.138	-0.008	0.027	0.050	0.072	0.102
Articles for Culture, Education, and Sport Activities	0.690	0.799	0.860	0.917	1.009	0.023	0.109	0.161	0.210	0.292	0.165	0.203	0.225	0.246	0.277
Petroleum, Coking, and Processing of Nuclear Fuel	0.767	0.824	0.864	0.908	0.996	0.088	0.119	0.135	0.155	0.198	-0.047	-0.014	0.005	0.024	0.053
Raw Chemical Materials and Chemical Products	0.765	0.877	0.943	1.009	1.111	0.003	0.042	0.079	0.116	0.166	-0.022	0.000	0.015	0.034	0.065
Manufacture of Medicines	0.715	0.814	0.872	0.929	1.015	-0.073	-0.008	0.039	0.082	0.154	0.158	0.164	0.167	0.171	0.179
Chemical Fibers	0.650	0.884	1.067	1.276	1.574	0.561	0.661	0.774	1.031	1.501	-0.170	-0.068	0.007	0.084	0.216
Rubber	0.758	0.874	0.943	1.022	1.157	0.038	0.072	0.104	0.136	0.180	0.045	0.069	0.094	0.117	0.151
Plastics	0.785	0.926	1.002	1.082	1.212	0.012	0.144	0.213	0.273	0.367	-0.031	0.027	0.043	0.048	0.055
Non-Metallic Mineral Products	0.748	0.822	0.872	0.925	1.000	0.220	0.307	0.370	0.426	0.501	0.053	0.070	0.081	0.090	0.107
Smelting and Pressing of Ferrous Metals	0.851	0.892	0.920	0.951	1.010	-0.015	0.022	0.050	0.074	0.104	-0.010	-0.003	0.004	0.015	0.050
Smelting and Pressing of Non-Ferrous Metals	0.864	0.920	0.960	1.006	1.075	0.001	0.044	0.070	0.096	0.138	0.015	0.032	0.043	0.052	0.063
Metal Products	0.793	0.893	0.946	1.002	1.095	-0.299	-0.204	-0.155	-0.117	-0.066	0.109	0.134	0.149	0.164	0.188
General Purpose Machinery	0.704	0.801	0.848	0.888	0.952	-0.488	-0.353	-0.286	-0.238	-0.177	0.224	0.277	0.309	0.341	0.385
Special Purpose Machinery	0.662	0.720	0.752	0.782	0.832	0.116	0.157	0.184	0.211	0.271	0.059	0.069	0.076	0.085	0.114
Transport Equipment	0.747	0.869	0.915	0.971	1.070	0.127	0.160	0.176	0.192	0.226	0.114	0.139	0.153	0.168	0.191
Electrical Machinery and Equipment	0.681	0.795	0.857	0.920	1.022	-0.353	-0.207	-0.128	-0.070	-0.002	0.063	0.093	0.110	0.125	0.149
Communication Equipment, Computers, and Other Electronic Equipment	0.807	0.884	0.930	0.984	1.087	0.064	0.121	0.150	0.178	0.229	0.097	0.116	0.127	0.138	0.154

Measuring Instruments and Machinery for Cultural Activities and Office Work	0.689	0.791	0.844	0.899	0.995	0.042	0.115	0.160	0.201	0.288	0.114	0.128	0.137	0.145	0.162
Artwork and Other Manufacturing	0.568	0.610	0.638	0.665	0.710	-0.018	0.015	0.035	0.054	0.086	0.173	0.198	0.213	0.230	0.261

Appendix Table 4: Output elasticities of inputs for different production function estimations

Industry	M				L				K			
	Q-TL-IP	Q-TL	R-CD	R-TL	Q-TL-IP	Q-TL	R-CD	R-TL	Q-TL-IP	Q-TL	R-CD	R-TL
Processing of Food from Agricultural Products	0.742	0.845	0.899	0.928	0.083	0.139	0.067	0.049	0.049	0.006	0.022	0.115
Manufacture of Foods	0.554	0.715	0.904	0.938	0.410	0.172	0.086	0.119	0.103	0.000	0.022	0.020
Manufacture of Beverages	0.841	1.426	0.854	0.978	-0.002	-0.468	0.118	0.097	0.071	0.451	-0.002	0.037
Textiles	0.901	0.725	0.808	0.908	0.110	0.213	0.137	0.092	0.014	0.173	0.004	0.112
Garment, Foot Ware, and Caps	0.584	0.502	0.829	0.156	0.214	0.234	0.201	0.409	0.271	0.097	-0.002	0.455
Leather, Fur, Feathers, and Related Products	0.892	0.150	0.828	0.885	0.229	0.721	0.076	0.117	0.063	0.108	0.061	0.114
Timber, Manufacture of Wood, Bamboo, Rattan, Palm, and Straw Products	0.637	0.620	0.875	0.903	0.286	1.044	0.117	0.094	0.149	0.135	-0.021	0.122
Furniture	0.875	0.741	0.888	0.889	0.961	0.872	0.063	0.027	0.254	0.215	0.078	0.258
Paper and Paper Products	1.026	0.740	0.837	0.932	0.013	0.236	0.134	0.064	0.009	0.097	-0.023	0.094
Printing, Reproduction of Recording Media	0.927	0.579	0.889	0.900	0.067	0.420	0.124	0.083	0.050	0.136	0.113	0.152
Articles for Culture, Education, and Sport Activities	0.860	0.544	0.885	0.887	0.161	0.521	0.124	0.184	0.225	0.034	0.012	0.115
Petroleum, Coking, and Processing of Nuclear Fuel	0.864	0.890	0.762	0.919	0.135	0.140	0.149	0.059	0.005	-0.058	0.074	0.021
Raw Chemical Materials and Chemical Products	0.943	0.635	0.711	0.990	0.079	0.180	0.204	0.074	0.015	-0.069	0.052	0.022
Manufacture of Medicines	0.872	0.587	0.857	0.902	0.039	0.036	0.117	0.072	0.167	-0.306	0.085	0.147
Chemical Fibers	1.067	0.893	0.871	0.853	0.774	-0.195	0.127	0.086	0.007	0.344	-0.012	0.038
Rubber	0.943	0.138	0.803	0.908	0.104	0.763	0.146	0.070	0.094	0.045	0.037	0.119
Plastics	1.002	0.442	0.865	0.908	0.213	1.826	0.089	0.213	0.043	-0.307	0.038	0.109
Non-Metallic Mineral Products	0.872	0.287	0.859	1.064	0.370	0.341	0.087	0.195	0.081	0.608	0.029	-0.011
Smelting and Pressing of Ferrous Metals	0.920	1.148	0.678	0.910	0.050	-0.723	0.241	0.088	0.004	0.267	0.086	0.016
Smelting and Pressing of Non-Ferrous Metals	0.960	0.825	0.905	0.984	0.070	0.170	-0.083	0.239	0.043	0.003	0.146	-0.007
Metal Products	0.946	0.901	0.798	0.930	-0.155	0.727	0.183	0.057	0.149	-0.369	0.032	0.095
General Purpose Machinery	0.848	0.873	0.780	0.993	-0.286	0.668	0.101	0.059	0.309	-0.698	0.093	0.021
Special Purpose Machinery	0.752	0.590	0.824	0.906	0.184	0.387	0.096	0.086	0.076	-0.042	0.088	0.090
Transport Equipment	0.915	0.105	0.771	0.899	0.176	0.599	0.157	0.130	0.153	-0.304	0.088	0.027
Electrical Machinery and Equipment	0.857	0.611	0.894	0.930	-0.128	0.358	0.088	0.121	0.110	0.044	0.026	0.024
Communication Equipment, Computers, and Other Electronic Equipment	0.930	-0.185	0.769	0.871	0.150	0.833	0.044	0.175	0.127	0.308	0.193	0.037
Measuring Instruments and Machinery for Cultural Activities and Office Work	0.844	0.718	0.803	0.892	0.160	0.071	0.168	0.117	0.137	-0.117	-0.043	0.111
Artwork and Other Manufacturing	0.638	0.002	0.877	0.846	0.035	-0.039	0.059	-0.040	0.213	0.224	0.040	0.273

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Note: Q-TL-IP: output is quantity-based, translog production function is employed, and omitted input prices bias is addressed in estimating production function.

Q-TL: output is quantity-based and Translog production function is employed.

R-CD: output is revenue-based and Cobb-Douglas production function is employed.

R-TL: output is revenue-based and Translog production function is employed.

Appendix Table 5: Markup mean and different quantiles

Industry	p5	p25	P50	p75	p95	Mean
Processing of Food from Agricultural Products	0.763	0.884	0.985	1.090	1.315	1.005
Manufacture of Foods	0.658	0.708	0.776	0.869	1.178	0.825
Manufacture of Beverages	0.874	1.067	1.191	1.336	1.664	1.217
Textiles	0.940	1.077	1.175	1.293	1.531	1.198
Garment, Foot Ware, and Caps	0.666	0.723	0.782	0.863	1.108	0.822
Leather, Fur, Feathers, and Related Products	0.912	1.073	1.174	1.301	1.570	1.199
Timber, Manufacture of Wood, Bamboo, Rattan, Palm, and Straw Products	0.693	0.781	0.853	0.941	1.215	0.888
Furniture	0.796	1.014	1.154	1.319	1.613	1.175
Paper and Paper Products	1.060	1.224	1.348	1.486	1.730	1.363
Printing, Reproduction of Recording Media	0.992	1.159	1.267	1.413	1.772	1.305
Articles for Culture, Education, and Sport Activities	0.896	1.044	1.128	1.230	1.475	1.150
Petroleum, Coking, and Processing of Nuclear Fuel	0.892	1.036	1.161	1.284	1.535	1.176
Raw Chemical Materials and Chemical Products	0.954	1.124	1.244	1.380	1.646	1.263
Manufacture of Medicines	0.905	1.091	1.222	1.391	1.760	1.260
Chemical Fibers	0.833	1.128	1.356	1.607	1.957	1.372
Rubber	0.968	1.147	1.270	1.414	1.701	1.294
Plastics	0.993	1.180	1.299	1.444	1.721	1.320
Non-Metallic Mineral Products	0.946	1.101	1.209	1.332	1.601	1.231
Smelting and Pressing of Ferrous Metals	0.959	1.087	1.193	1.310	1.542	1.212
Smelting and Pressing of Non-Ferrous Metals	0.993	1.121	1.229	1.352	1.596	1.251
Metal Products	0.983	1.131	1.230	1.353	1.606	1.254
General Purpose Machinery	0.907	1.039	1.126	1.238	1.510	1.156
Special Purpose Machinery	0.813	0.932	1.020	1.131	1.441	1.056
Transport Equipment	0.932	1.107	1.223	1.365	1.676	1.251
Electrical Machinery and Equipment	0.868	1.014	1.112	1.235	1.502	1.140
Communication Equipment, Computers, and Other Electronic Equipment	0.951	1.114	1.226	1.374	1.713	1.261
Measuring Instruments and Machinery for Cultural Activities and Office Work	0.877	1.031	1.134	1.279	1.634	1.176
Artwork and Other Manufacturing	0.717	0.793	0.856	0.938	1.189	0.892

Appendix Table 6: Correlations among markups from different production function estimations

	Q-TL-IP	Q-TL	R-CD	R-TL
Q-TL-IP	1			
Q-TL	0.21***	1		
R-CD	-0.14***	-0.09***	1	
R-TL	0.22***	-0.04***	0.31***	1

Note: Q-TL-IP: output is quantity-based, translog production function is employed, and omitted input prices bias is addressed in estimating production function.

Q-TL: output is quantity-based and Translog production function is employed.

R-CD: output is revenue-based and Cobb-Douglas production function is employed.

R-TL: output is revenue-based and Translog production function is employed.

Appendix Table 7: Markup Dispersion

Industry	Markup dispersion			
	Theil	Gini	CV	RMD
Processing of Food from Agricultural Products	0.015	0.092	0.178	0.064
Manufacture of Foods	0.022	0.102	0.223	0.073
Manufacture of Beverages	0.016	0.099	0.184	0.069
Textiles	0.012	0.086	0.160	0.060
Garment, Foot Ware, and Caps	0.015	0.087	0.187	0.061
Leather, Fur, Feathers, and Related Products	0.014	0.093	0.170	0.065
Timber, Manufacture of Wood, Bamboo, Rattan, Palm, and Straw Products	0.019	0.098	0.202	0.069
Furniture	0.019	0.109	0.198	0.077
Paper and Paper Products	0.012	0.086	0.156	0.060
Printing, Reproduction of Recording Media	0.018	0.104	0.191	0.073
Articles for Culture, Education, and Sport Activities	0.012	0.083	0.159	0.057
Petroleum, Coking, and Processing of Nuclear Fuel	0.014	0.092	0.171	0.064
Raw Chemical Materials and Chemical Products	0.014	0.092	0.168	0.064
Manufacture of Medicines	0.018	0.106	0.193	0.074
Chemical Fibers	0.030	0.138	0.243	0.100
Rubber	0.014	0.093	0.169	0.065
Plastics	0.014	0.092	0.167	0.064
Non-Metallic Mineral Products	0.013	0.088	0.164	0.061
Smelting and Pressing of Ferrous Metals	0.012	0.085	0.157	0.059
Smelting and Pressing of Non-Ferrous Metals	0.013	0.087	0.160	0.061
Metal Products	0.012	0.084	0.156	0.058
General Purpose Machinery	0.013	0.087	0.167	0.060
Special Purpose Machinery	0.017	0.098	0.191	0.068
Transport Equipment	0.015	0.094	0.173	0.066
Electrical Machinery and Equipment	0.015	0.094	0.177	0.065
Communication Equipment, Computers, and Other Electronic Equipment	0.016	0.099	0.182	0.069
Measuring Instruments and Machinery for Cultural Activities and Office Work	0.018	0.103	0.193	0.072
Artwork and Other Manufacturing	0.016	0.088	0.192	0.061

Appendix Table 8: Average industry concentration and agglomeration degrees

Industry	HHI			EG		
	98-01	02-05	Change(%)	98-01	02-05	Change(%)
Processing of Food from Agricultural Products	0.0054	0.0060	12.08	0.0183	0.0255	38.89
Manufacture of Foods	0.0086	0.0102	18.26	0.0056	0.0096	72.59
Manufacture of Beverages	0.0092	0.0116	26.40	0.0065	0.0096	48.79
Textiles	0.0060	0.0052	-12.40	0.0139	0.0216	55.01
Garment, Foot Ware, and Caps	0.0118	0.0095	-19.44	0.0333	0.0185	-44.36
Leather, Fur, Feathers, and Related Products	0.0091	0.0078	-14.22	0.0154	0.0293	89.75
Timber, Manufacture of Wood, Bamboo, Rattan, Palm, and Straw Products	0.0113	0.0085	-24.81	0.0106	0.0171	61.65
Furniture	0.0650	0.0453	-30.26	0.0031	0.0129	319.99
Paper and Paper Products	0.0142	0.0124	-13.06	0.0026	0.0038	48.06
Printing, Reproduction of Recording Media	0.0220	0.0164	-25.37	0.0101	0.0128	27.15
Articles for Culture, Education, and Sport Activities	0.0169	0.0130	-22.94	0.0275	0.0343	24.81
Petroleum, Coking, and Processing of Nuclear Fuel	0.0250	0.0139	-44.53	0.0139	0.0212	53.27
Raw Chemical Materials and Chemical Products	0.0078	0.0053	-32.16	0.0033	0.0068	105.40
Manufacture of Medicines	0.0094	0.0090	-3.76	0.0080	0.0105	32.03
Chemical Fibers	0.0303	0.0289	-4.51	0.0027	0.0103	283.38
Rubber	0.0156	0.0133	-14.98	0.0059	0.0115	96.60
Plastics	0.0058	0.0039	-32.62	0.0145	0.0157	8.21
Non-Metallic Mineral Products	0.0043	0.0030	-29.74	0.0146	0.0209	43.20
Smelting and Pressing of Ferrous Metals	0.0229	0.0178	-22.49	0.0062	0.0159	156.69
Smelting and Pressing of Non-Ferrous Metals	0.0654	0.0400	-38.87	0.0183	0.0302	64.86
Metal Products	0.0061	0.0056	-8.90	0.0066	0.0095	45.23
General Purpose Machinery	0.0162	0.0156	-3.48	0.0027	0.0071	158.09
Special Purpose Machinery	0.0082	0.0074	-9.83	0.0071	0.0106	49.84
Transport Equipment	0.0139	0.0197	41.74	0.0189	0.0342	81.06
Electrical Machinery and Equipment	0.0091	0.0073	-19.57	0.0088	0.0146	64.85
Communication Equipment, Computers, and Other Electronic Equipment	0.0178	0.0177	-1.04	0.0232	0.0416	79.30
Measuring Instruments and Machinery for Cultural Activities and Office Work	0.0194	0.0137	-29.65	0.0172	0.0279	62.08
Artwork and Other Manufacturing	0.0044	0.0030	-32.73	0.0153	0.0220	44.22