

Appendix

Table A1. Estimation results in the hedonic price regression

Variable	Coefficient	Standard Error
Soil quality δ	0.01233***	0.0001
Plot size ρ	0.00232***	0.0004
<i>County dummy variables u_i</i>		
Ammerland	8.8301***	0.0303
Aurich	8.6293***	0.0157
Benthem	9.3293***	0.0190
Celle	8.6067***	0.0196
Cloppenburg	9.1396***	0.0167
Cuxhaven	8.6119***	0.0168
Diepholz	8.7535***	0.0122
Emsland	8.8966***	0.0165
Friesland	8.6676***	0.0409
Gifhorn	8.4645***	0.0169
Goslar	8.9279***	0.0214
Göttingen	8.5138***	0.0159
Hamelin-Pyrmont	8.9249***	0.0175
Hanover Region	9.1949***	0.0146
Harburg	8.7436***	0.0229
Heidekreis	8.4450***	0.0176
Helmstedt	8.5638***	0.0239
Hildesheim	8.9928***	0.0147
Holzminden	8.6000***	0.0164
Leer	8.9791***	0.0335
Lüchow--Dannenberg	8.2041***	0.0153
Lüneburg	8.6118***	0.0221
Nienburg	8.6582***	0.0130
Northeim	8.5879***	0.0150
Oldenburg	8.8939***	0.0170
Osnabrück	9.2059***	0.0167
Osterholz	8.8780***	0.0353
Osterode	8.0751***	0.0239
Peine	9.1976***	0.0179
Rotenburg	8.4767***	0.0142
Schaumburg	8.9069***	0.0173
Stade	8.5604***	0.0229
Uelzen	8.6500***	0.0229
Vechta	9.4863***	0.0184
Verden	8.5409***	0.0193
Wittmund	8.5970***	0.0402
Wolfenbüttel	9.0530***	0.0180
<i>Linear trend σ_i</i>		
Ammerland	0.0073***	0.0005
Aurich	0.0018***	0.0003
Benthem	0.0073***	0.0003
Celle	0.0032***	0.0003
Cloppenburg	0.0095***	0.0003
Cuxhaven	0.0042***	0.0003
Diepholz	0.0070***	0.0002
Emsland	0.0105***	0.0002
Friesland	0.0037***	0.0008
Gifhorn	0.0044***	0.0003
Goslar	-0.0002	0.0003
Göttingen	0.0019***	0.0002
Hamelin-Pyrmont	0.0017***	0.0002

Variable	Coefficient	Standard Error
Hanover Region	0.0014***	0.0002
Harburg	0.0040***	0.0003
Heidekreis	0.0045***	0.0003
Helmstedt	0.0015***	0.0003
Hildesheim	0.0010***	0.0002
Holzminden	0.0008***	0.0002
Leer	0.0038***	0.0005
Lüchow-Dannenberg	0.0035***	0.0003
Lüneburg	0.0012***	0.0004
Nienburg	0.0043***	0.0002
Northeim	0.0005**	0.0002
Oldenburg	0.0088***	0.0002
Osnabrück	0.0066***	0.0002
Osterholz	0.0033***	0.0005
Osterode	0.0019***	0.0003
Peine	0.0004	0.0002
Rotenburg	0.0073***	0.0002
Schaumburg	0.0020***	0.0002
Stade	0.0078***	0.0003
Uelzen	0.0025***	0.0004
Vechta	0.0068***	0.0003
Verden	0.0058***	0.0003
Wittmund	0.0047***	0.0007
Wolfenbüttel	-0.0014***	0.0003
Number of observations	78,253	
Squared correlation	0.5361	

*, **, and *** denote statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively.

Table A2: Pairwise error correction models for suitable dominant counties

County	Cloppenburg		Vechta		Emsland		Oldenburg	
	ϕ_{i0}	ϕ_{0i}	ϕ_{i0}	ϕ_{0i}	ϕ_{i0}	ϕ_{0i}	ϕ_{i0}	ϕ_{0i}
Ammerland	-0.613***	-0.004	-0.601***	-0.004	-0.736***	-0.004	-0.565***	-0.012
Aurich	-0.419***	-0.002	/	/	-0.503***	-0.003	/	/
Bentheim	-0.757***	-0.002	-0.627***	-0.025	-0.756***	-0.008	-0.693***	-0.001
Celle	-1.024***	-0.002	-0.840***	-0.002	-1.027***	-0.001	-1.046***	-0.002
Cloppenburg	—	—	-0.505***	-0.016	-0.452***	-0.052**	-0.349***	-0.034
Cuxhaven	-0.617***	-0.001	-0.601***	-0.007	-0.557***	-0.003	/	/
Diepholz	-0.399***	-0.023	-0.231***	-0.032	-0.446***	-0.028	-0.327***	-0.037
Emsland	-0.451***	-0.021	-0.212**	-0.194***	—	—	-0.276***	-0.048*
Friesland	-0.914***	-0.001	-1.086***	0.003	-0.937***	0.003	-0.789***	-0.001
Gifhorn	-0.609***	-0.002	-0.618***	-0.002	-0.700***	0.000	-0.573***	-0.002
Goslar	-0.725***	0.000	-0.798***	0.003	-0.721***	0.002	-0.702***	0.000
Göttingen	-0.650***	0.001	-0.545***	0.000	-0.656***	0.001	-0.632***	0.000
Hamelin-Pyrmont	-1.009***	0.000	-0.879***	0.003	-0.970***	0.003	-0.932***	0.001
Hanover Region	-0.640***	0.000	-0.688***	0.001	-0.652***	0.000	-0.670***	0.000
Harburg	-0.840***	-0.001	-0.658***	-0.008	-0.958***	0.000	-0.864***	-0.001
Heidekreis	-0.613***	-0.005	-0.564***	-0.005	-0.694***	-0.001	-0.570***	-0.001
Helmstedt	-0.727***	0.000	-0.720***	0.000	-0.737***	0.001	-0.676***	-0.001
Hildesheim	-0.507***	0.000	-0.437***	0.000	-0.473***	0.000	-0.435***	0.000
Holzminden	-0.859***	0.000	-0.926***	0.000	-0.912***	0.002	-0.968***	0.002
Leer	-0.586***	0.000	-0.531***	-0.004	-0.639***	0.000	-0.590***	-0.004
Lüchow-Dannenberg	-0.434***	-0.002	/	/	-0.392***	-0.011	-0.400***	-0.002
Lüneburg	-0.666***	0.000	-0.650***	0.001	-0.680***	0.001	/	/
Nienburg	-0.400***	-0.004	-0.349***	-0.017	-0.458***	-0.006	-0.348***	-0.005
Northeim	-0.566***	0.000	/	/	-0.561***	0.001	-0.519***	0.000
Oldenburg	-0.562***	0.461***	-0.386***	0.398***	-0.641***	0.645***	—	—
Osnabrück	-0.597***	-0.016	-0.426***	-0.036	-0.586***	-0.044**	-0.538***	-0.013
Osterholz	-0.797***	0.000	-0.798***	-0.003	-0.790***	0.000	-0.838***	0.000
Osterode	-0.581***	0.000	-0.535***	0.000	-0.588***	0.000	-0.579***	0.000
Peine	-0.614***	0.002	/	/	-0.643***	0.002	-0.580***	0.001
Rotenburg	-0.425***	-0.003	-0.186**	-0.036	-0.499***	-0.011	-0.452***	-0.011
Schaumburg	-0.829***	0.001	-0.708***	-0.001	-0.712***	0.001	-0.763***	0.000
Stade	-0.801***	-0.009	-0.647***	-0.025	-0.778***	-0.002	-0.681***	-0.002
Uelzen	-1.166***	-0.001	-1.225***	0.000	-1.204***	0.000	-1.125***	0.000
Vechta	-0.832***	-0.018	—	—	-1.195***	-0.002	-0.587***	-0.006
Verden	-0.576***	-0.004	-0.526***	-0.019	-0.594***	-0.016	-0.503***	-0.005
Wittmund	-0.587***	-0.001	/	/	-0.661***	0.001	-0.543***	-0.002
Wolfenbüttel	-0.871***	0.000	-0.764***	0.001	-0.854***	0.000	-0.813***	0.000

“/” denotes that there is no cointegration relationship between the candidate and other counties. *, **, and *** denote significance at the 90%, 95%, and 99% level, respectively.

Table A3. Cointegration tests with neighbors and a dominant county Cloppenburg

County	Cointegrating vector		Trace statistic
	Neighbors $\hat{\beta}_i$	Cloppenburg $\hat{\beta}_{i0}$	
Ammerland	0.493***	0.396***	122.00***
Aurich	0.418***	0.347***	111.85***
Bentheim	0.552***	0.194	133.77***
Celle	0.225*	0.373***	155.52***
Cuxhaven	0.345***	0.371***	144.41***
Diepholz	0.901***	0.201***	164.00***
Emsland	0.395***	0.573***	120.77***
Friesland	0.272**	0.556***	106.86***
Gifhorn	0.768***	0.328***	122.52***
Goslar	0.536***	-0.047	110.03***
Göttingen	0.240**	0.158***	108.63***
Hamelin-Pyrmont	0.277**	0.152***	121.15***
Hanover Region	0.897***	-0.035	116.91***
Harburg	0.441***	0.242**	127.72***
Heidekreis	0.835***	0.181**	126.32***
Helmstedt	0.450***	0.140**	128.16***
Hildesheim	0.589***	0.094**	96.65***
Holzminen	0.673***	0.039	142.70***
Leer	0.879***	0.028	96.48***
Lüchow-Dannenberg	0.380***	0.422***	127.91***
Lüneburg	0.498***	0.223**	150.54***
Nienburg	0.946***	0.146**	119.18***
Northeim	0.497***	0.177***	124.17***
Oldenburg	0.629***	0.381***	139.65***
Osnabrück	0.626***	0.205***	145.78***
Osterholz	0.296	0.269	152.15***
Osterode	0.571***	0.218***	118.46***
Peine	0.616***	-0.015	124.73***
Rotenburg	0.721***	0.383***	138.50***
Schaumburg	0.201**	0.179***	130.10***
Stade	0.590***	0.378***	145.48***
Uelzen	0.860***	0.013	152.82***
Vechta	0.709***	0.165	154.96***
Verden	0.469***	0.319***	126.92***
Wittmund	0.789***	0.287**	114.62***
Wolfenbüttel	0.362**	0.173***	135.57***

The trace statistic for testing $H_0: r=0$ vs. $H_1: r \geq 1$ was estimated with unrestricted intercepts and restricted trend coefficients, where r denotes the number of cointegrating vectors. *, **, and *** denote significance at the 90%, 95%, and 99% level, respectively.

Table A4. Estimation results of regional price diffusion equations with neighbors and a dominant county Cloppenburg

County	Adjustment speed	Own lag effects	Neighbor lag effects	Cloppenburg lag effects	Neighbors' contemp. effect	Cloppenburg contemp. effect	Wu-Hausman test
Ammerland	-0.693***	-0.152*	-0.125	-0.052	0.260***	0.090	0.02
Aurich	-0.514***	-0.306***	-0.014	-0.052	0.193***	-0.046	2.86*
Bentheim	-0.593***	-0.317***	-0.060	0.070	0.329**	0.007	1.04
Celle	-0.963***	-0.147*	0.155	-0.081	0.595***	0.282**	0.27
Cuxhaven	-0.546***	-0.403***	-0.188**	-0.230**	0.112	0.095	2.19
Diepholz	-0.788***	-0.196***	-0.099	-0.080	0.269**	0.089	1.89
Emsland	-0.701***	-0.076	-0.114**	-0.191***	0.101**	0.145**	3.05*
Friesland	-0.944***	-0.078	-0.108	0.036	0.248**	0.215	1.20
Gifhorn	-0.801***	-0.074	-0.036	0.240***	0.422***	-0.025	1.51
Goslar	-0.729***	-0.155*	0.208	0.045	0.199	-0.167	0.01
Göttingen	-0.533***	-0.332***	-0.031	0.096	0.314***	0.096	0.75
Hamelin-Pyrmont	-0.845***	-0.110	—	-0.136	0.156	-0.052	2.26
Hanover Region	-0.780***	-0.128*	—	0.123	0.704***	-0.080	1.91
Harburg	-0.769***	-0.116	0.317*	-0.192	0.410**	-0.137	0.23
Heidekreis	-0.922***	-0.086	-0.376***	0.058	0.080	0.156*	1.09
Helmstedt	-0.857***	-0.029	-0.098	-0.075	0.200**	-0.101	0.02
Hildesheim	-0.652***	-0.004	—	0.056	0.102	-0.052	1.88
Holz Minden	-0.791***	-0.213**	—	-0.114	0.629***	0.192	1.18
Leer	-0.688***	—	-0.227	-0.104	0.502***	0.313	0.52
Lüchow-Dannenberg	-0.436***	-0.147*	—	-0.075	0.056	-0.057	0.44
Lüneburg	-0.724***	-0.394***	-0.207	-0.112	0.022	0.042	1.03
Nienburg	-0.610***	-0.264***	-0.115	0.060	0.258**	0.052	0.00
Northheim	-0.670***	-0.224***	—	-0.105	0.196**	0.050	0.88
Oldenburg	-0.683***	-0.301***	0.074	-0.214**	0.279**	0.050	0.62
Osnabrück	-0.641***	-0.316***	0.091	0.098	0.354***	0.102	0.07
Osterholz	-0.851***	-0.196***	-0.457**	0.081	-0.445**	0.146	0.14
Osterode	-0.671***	-0.210***	-0.158	-0.140	0.274**	0.201*	0.27
Peine	-0.756***	-0.138	-0.085	0.002	0.189	0.131	2.31
Rotenburg	-0.539***	-0.290***	-0.128	0.030	0.151	0.105	0.27
Schaumburg	-0.858***	-0.116	-0.011	-0.074	0.080	0.096	2.47
Stade	-0.836***	-0.060	0.288**	-0.058	0.424***	0.064	0.60
Uelzen	-1.264***	-0.103	-0.545***	-0.002	0.443**	0.010	1.40
Vechta	-0.919***	-0.100	-0.171	-0.099	0.411***	-0.020	0.84
Verden	-0.681***	-0.198**	-0.103	0.024	0.035	0.056	0.46
Wittmund	-0.641***	-0.178**	—	-0.145	0.430***	0.232	0.41
Wolfenbüttel	-0.937***	—	-0.417***	-0.155	-0.277**	-0.002	0.52

The lag orders for each region are selected separately using the Bayesian information criterion using a maximum lag order of four. The reported coefficient for the lagged effects is the value with the lowest *p*-value. “—” denotes a lag order of zero. All regressions include an intercept term. *, **, and *** denote significance at the 90%, 95%, and 99% level, respectively.