

## Appendix A. Regression tables for the analysis of different historical periods

**Table A1.** Results for 1881–1929

Variables	Predicting Urban Rate (Model 1.1)		Predicting N <sup>o</sup> Buildings (Model 2.1)		Predicting Road Network Length (Model 3.1)		Predicting Transit Network Length (Model 4.1)	
	Mean	P-value	Mean	P-value	Mean	P-value	Mean	P-value
Constant	0.0977 (0.0615)	0.1122	-0.0634 (0.0304)	0.0370	0.0048 (0.0489)	0.9215	0.1441 (0.1971)	0.4649
Lagged Predicted Variable (t-1)	0.8394 (0.1128)	0.0000 ***	1.3324 (0.0199)	0.0000 ***	0.9972 (0.0898)	0.0000 ***	1.0683 (0.1896)	0.0000 ***
Δ Urban Rate (t-1 - t-2)	-	-	-0.0327 (0.066)	0.6914	0.0868 (0.0335)	0.0048 ***	0.4226 (0.2012)	0.0179 **
Δ Neighbor Urban Rate (t-1 - t-2)	0.3186 (0.1444)	0.0137 **	0.0604 (0.0799)	0.2237	0.0584 (0.0512)	0.1270	-0.1918 (0.416)	0.6776
Δ N <sup>o</sup> Buildings (t-1 - t-2)	-0.0027 (0.0066)	0.6568	-	-	-0.0032 (0.0123)	0.6037	-0.0428 (0.1865)	0.5908
Δ Neighbor N <sup>o</sup> Buildings (t-1 - t-2)	-0.0075 (0.015)	0.6910	0.2555 (0.0193)	0.0000 ***	-0.0093 (0.0149)	0.7342	-0.0615 (0.3559)	0.5686
Δ Road Network Length (t-1 - t-2)	0.0442 (0.0235)	0.0302 **	-0.1307 (0.0523)	0.9938	-	-	-0.0096 (0.0703)	0.5544
Δ Neighbor Road Network Length (t-1 - t-2)	0.0307 (0.0435)	0.2406	0.0982 (0.0791)	0.1075	-0.0431 (0.1124)	0.6494	-0.1302 (0.193)	0.7499
Δ Mass Transit Network Length (t-1 - t-2)	0.0057 (0.0034)	0.0453 **	0.0436 (0.0155)	0.0025 ***	-0.0139 (0.0073)	0.9717	-	-
Δ Neighbor Mass Transit Network Length (t-1 - t-2)	0.0022 (0.0088)	0.4029	0.1460 (0.0137)	0.0000 ***	0.0186 (0.0117)	0.0557 *	0.198 (0.1492)	0.0923 *
Δ Predicted Variable in the whole City (t - t-1)	1.0673 (0.2009)	0.0000 ***	0.0006 (0.0004)	0.0940 *	0.0019 (0.0002)	0.0000 ***	0.0018 (0.0004)	0.0000 ***
Distance to CBD	-0.0123 (0.0049)	0.0121 **	0.0039 (0.0028)	0.1610	-0.0045 (0.0038)	0.2396	-0.0308 (0.0196)	0.1167
Terrain roughness	-0.0009 (0.0008)	0.2562	0.0004 (0.002)	0.8420	0.0021 (0.0025)	0.4048	0.0043 (0.0065)	0.5051
N <sup>o</sup> Observations	2675		2675		2675		2675	
R <sup>2</sup>	0.7955		0.6882		0.7892		0.8615	

Notes: Significance threshold: \* 0.1, \*\* 0.05, \*\*\* 0.01. Standard deviation calculated as panel-corrected SE. t-1 indicates 7-year to 9-year lag. Balanced panel dataset with 535 grid cells (0.75km). Cells with urbanization rate and number of buildings equal to zero in the end-period were included in the regression.

**Table A2.** Results for 1929-1974

Variables	Predicting Urban Rate (Model 1.2)		Predicting N <sup>o</sup> Buildings (Model 2.2)		Predicting Road Network Length (Model 3.2)		Predicting Mass Transit Network Length (Model 4.2)	
	Mean	P-value	Mean	P-value	Mean	P-value	Mean	P-value
Constant	0.1906 (0.0742)	0.0102 **	4.4186 (3.6038)	0.2202	0.3192 (0.1156)	0.0058 ***	0.1331 (0.0968)	0.1692
Lagged Predicted Variable (t-1)	0.8496 (0.0764)	0.0000 ***	1.5856 (0.1037)	0.0000 ***	0.9784 (0.0485)	0.0000 ***	1.0793 (0.0354)	0.0000 ***
$\Delta$ Urban Rate (t-1 - t-2)	-	-	-1.5374 (2.2669)	0.7512	0.3253 (0.1203)	0.0035 ***	-0.0955 (0.0797)	0.8845
$\Delta$ Neighbor Urban Rate (t-1 - t-2)	0.0867 (0.1535)	0.2861	-5.8425 (4.6600)	0.8950	-0.3218 (0.116)	0.9972	0.0915 (0.086)	0.1438
$\Delta$ N <sup>o</sup> Buildings (t-1 - t-2)	0.000 (0.0001)	0.5621	-	-	-0.0006 (0.001)	0.7175	-0.0166 (0.0106)	0.9413
$\Delta$ Neighbor N <sup>o</sup> Buildings (t-1 - t-2)	-0.0002 (0.0002)	0.8381	0.099 (0.2069)	0.3162	0.0006 (0.0009)	0.2506	-0.0028 (0.0038)	0.7728
$\Delta$ Road Network Length (t-1 - t-2)	0.0046 (0.0069)	0.2530	-0.2397 (0.7896)	0.6193	-	-	0.018 (0.0199)	0.1827
$\Delta$ Neighbor Road Network Length (t-1 - t-2)	-0.0074 (0.0205)	0.6404	0.3569 (1.9696)	0.4281	-0.0646 (0.1089)	0.7235	-0.1162 (0.0454)	0.9948
$\Delta$ Mass Transit Network Length (t-1 - t-2)	0.0000 (0.0031)	0.4954	3.9291 (4.4423)	0.1882	-0.0125 (0.0156)	0.7883	-	-
$\Delta$ Neighbor Mass Transit Network Length (t-1 - t-2)	-0.0046 (0.004)	0.8729	-1.4371 (4.0199)	0.6396	-0.0042 (0.0149)	0.6121	0.2261 (0.1199)	0.0297 **
$\Delta$ Predicted Variable in the whole City (t - t-1)	0.8294 (0.1814)	0.0000 ***	0.001 (0.0002)	0.0000 ***	0.0019 (0.0002)	0.0000 ***	0.0001 (0.0002)	0.7011
Distance to CBD	-0.0061 (0.0025)	0.0148 **	-0.3257 (0.1760)	0.0643 *	-0.0158 (0.005)	0.0017 ***	-0.0051 (0.0034)	0.1315
Terrain roughness	-0.0020 (0.0007)	0.0026 ***	-0.026 (0.0276)	0.3455	-0.0037 (0.0014)	0.0111 **	-0.0001 (0.0007)	0.9412
Land-use restrictions	-0.0194 (0.0295)	0.5111	-0.3105 (1.1294)	0.7834	0.2222 (0.0751)	0.0031 ***	-0.0365 (0.0424)	0.3888
N <sup>o</sup> Observations	3342		3342		3342		3342	
R <sup>2</sup>	0.8356		0.9493		0.8986		0.9926	

Notes: Significance threshold: \* 0.1, \*\* 0.05, \*\*\* 0.01. Standard deviation calculated as panel-corrected SE. t-1 indicates 5-year to 8-year lag. Balanced panel dataset with 557 grid cells (1.5km). Cells with urbanization rate and number of buildings equal to zero in the end-period were included in the regression.

**Table A3.** Results for 1974–2013

Variables	Predicting Urban Rate (Model 1.3)		Predicting N <sup>o</sup> Buildings (Model 2.3)		Predicting Road Network Length (Model 3.3)		Predicting Mass Transit Network Length (Model 4.3)	
	Mean	P-value	Mean	P-value	Mean	P-value	Mean	P-value
Constant	0.0075 (0.0113)	0.5073	2.2856 (2.295)	0.3194	0.1308 (0.111)	0.2388	0.0455 (0.0899)	0.6127
Lagged Predicted Variable (t-1)	0.9898 (0.0103)	0.0000 ***	1.0188 (0.0038)	0.0000 ***	0.9927 (0.0128)	0.0000 ***	1.0082 (0.0039)	0.0000 ***
$\Delta$ Urban Rate (t-1 - t-2)	-	-	29.3846 (12.5488)	0.0096 ***	0.6546 (0.2083)	0.0008 ***	-0.4615 (0.2083)	0.9866
$\Delta$ Neighbor Urban Rate (t-1 - t-2)	0.0884 (0.1049)	0.1998	-16.0724 (15.0609)	0.8570	-0.0487 (0.3729)	0.5519	-0.6432 (0.3788)	0.9552
$\Delta$ N <sup>o</sup> Buildings (t-1 - t-2)	0.000 (0.0001)	0.6722	-	-	0.0003 (0.0006)	0.2767	0.0018 (0.0015)	0.1093
$\Delta$ Neighbor N <sup>o</sup> Buildings (t-1 - t-2)	-0.0001 (0.0001)	0.9369	0.288 (0.0575)	0.0000 ***	-0.0009 (0.0006)	0.9307	0.0012 (0.0016)	0.2278
$\Delta$ Road Network Length (t-1 - t-2)	0.0029 (0.0012)	0.0072 ***	0.0342 (0.8207)	0.4834	-	-	-0.0084 (0.0418)	0.5799
$\Delta$ Neighbor Road Network Length (t-1 - t-2)	0.0043 (0.002)	0.0140 **	-1.1430 (1.0379)	0.8645	-0.0215 (0.0645)	0.6302	0.0320 (0.0311)	0.1513
$\Delta$ Mass Transit Network Length (t-1 - t-2)	0.0002 (0.0008)	0.4029	-1.6954 (0.9441)	0.9637	0.0180 (0.0172)	0.1479	-	-
$\Delta$ Neighbor Mass Transit Network Length (t-1 - t-2)	0.0001 (0.0014)	0.4675	0.9802 (1.1193)	0.1906	-0.0175 (0.019)	0.8222	-0.0399 (0.0931)	0.6660
$\Delta$ Predicted Variable in the whole City (t - t-1)	0.8949 (0.096)	0.0000 ***	0.0024 (0.0003)	0.0000 ***	0.0028 (0.0004)	0.0000 ***	0.0029 (0.0003)	0.0000 ***
Distance to CBD	0.0000 (0.0003)	0.9571	-0.3648 (0.074)	0.0000 ***	-0.0047 (0.0031)	0.1289	-0.0034 (0.0026)	0.1841
Terrain roughness	-0.0001 (0.0001)	0.1129	-0.0308 (0.0216)	0.1545	-0.0012 (0.0009)	0.1896	-0.0016 (0.0009)	0.0762 *
Land-use restrictions	-0.0100 (0.0055)	0.0679	-8.5612 (1.5369)	0.0000 ***	-0.0028 (0.0203)	0.8917	0.0381 (0.0411)	0.3538
N <sup>o</sup> Observations	2232		2232		2232		2232	
R <sup>2</sup>	0.9903		0.9983		0.9887		0.9981	

Notes: Significance threshold: \* 0.1, \*\* 0.05, \*\*\* 0.01. Standard deviation calculated as panel-corrected SE. t-1 indicates 5-year to 7-year lag. Balanced panel dataset with 372 grid cells (2km). Cells with urbanization rate and number of buildings equal to zero in the end-period were not included in the regression.