Appendix K – Placebo Tests

TABLE K.1A: PLACEBO TEST ON LN URBAN LIGHT LUMINOSITY SUM,

1992-2019, ADJACENT CITIES

Lnsum	Coefficient	Std. err.	t	P>t	Number of obs =	R-squared =
placebo _city	0.0629028	0.0422153	1.49	0.136	4,895	0.2732
_cons	9.195999	0.015922	577.57	0		

TABLE K.1B: PLACEBO TEST ON LN URBAN LIGHT LUMINOSITY COUNT,

1992-2019, ADJACENT CITIES

lncount	Coefficient	Std. err.	t	P>t	Number of obs =	R-squared
placebo _city	0.1545125	0.0387707	3.99	0	4,895	0.274
_cons	6.665498	0.0146228	455.83	0		

TABLE K.1C: PLACEBO TEST ON LN URBAN LIGHT LUMINOSITY SUM,

1992-2019, SIMILAR CITIES

lnsum	Coefficient	Std. err.	t	P>t	Number of obs =	R-squared
placebo _city	0.0443524	0.0261451	1.7	0.09	2,380	0.7392
_cons	9.209069	0.0141042	652.93	0		

TABLE K.1D: PLACEBO TEST ON LN URBAN LIGHT LUMINOSITY COUNT,

1992-2019, SIMILAR CITIES

lncount	Coefficient	Std. err.	t	P>t	Number of obs =	R-squared
placebo _city	0.042784	0.0238223	1.8	0.073	2,380	0.7111
_cons	6.729483	0.0128511	523.65	0		

To further explore the distinct patterns of formerly closed Soviet cities, and as a check on the quality of the adjacent and similar city matches chosen, we randomly generate 25 numbers and use the numbers as the city ID's to generate 25 placebo cities to replace the Russian closed cities. We then run the model on these 25 cities; results for the placebo city indicator variable are reported in Table K.1.

Table K.1A shows that a set of randomly chosen cities do not differ in terms of luminosity development with their nearby cities. However, Table K.1B shows that for the city expansion, the randomly chosen placebo cities are statistically different from their adjacent cities. In any case, the coefficient is much smaller than the case of closed cities, further suggesting that the large results for closed cities are unlikely to be a random fluke. Similar results emerge when compared with similar cities in Table K.1C and Table K.1D.