

Online Appendix:

Table A-1: Summary Statistics Based on All Available Observations.

Variable Name	N. obs	Mean	SD	Min	Max
PM2.5	3,105	29.3	15.05	2.65	74.63
year before turnover	2,036	0.25	0.44	0	1
years in office	1,987	2.51	1.29	1	5
second term	1,987	0.08	0.28	0	1
prov connect	1,980	0.72	0.45	0	1
SOE experience	1,884	0.18	0.38	0	1
GDP per cap	2,542	27,029.83	25,924.60	1,765.29	300,492.20
pop density	2,545	1.01	1.04	0.01	14.05
FDI per cap	2,337	131.95	223.73	0	2,541.82
growth rate	2,527	14.03	4.4	-6.3	48
dist to Beijing	3,015	1,269.90	655.94	0.0001	3,436.53
dist to prov cap	3,015	206.41	183.65	0.0001	1,168.33
elevation	3,096	796.67	1,032.56	1.04	5,039.23
number of power plants	3,105	7.3	7.25	0	52
urban	2,506	0.69	0.28	0.12	3.59
road per cap	2,543	8.41	5.81	0	85.2
taxi per cap	2,540	2,859.38	5,712.22	45	66,646
top 10 coal sale	3,114	0.03	0.18	0	1

**Table A-2: Correlation statistics based all available observations.**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.PM2.5	1	0.1	0.1	0.05	0.003	0.04	0.01	0.3	0.1	-0.1	-0.1	-0.3	-0.5	0.02	-0.1	0.1	-0.1	0.1
2.year before turnover	0.1	1	0.4	0.1	-0.002	-0.03	-0.02	0.02	-0.02	0.05	-0.01	0.003	-0.004	0.01	-0.1	-0.01	0.01	0.01
3.years in office	0.1	0.4	1	-0.2	0.01	-0.05	0.05	0.02	0.005	0.1	-0.04	-0.03	-0.04	-0.01	0.1	0.1	-0.001	0.01
4.second term	0.05	0.1	-0.2	1	0.01	0.01	0.04	0.02	0.1	-0.001	0.02	-0.1	-0.04	0.003	0.01	0.04	-0.001	-0.03
5.prov connect	0.003	-0.002	0.01	0.01	1	-0.02	0.1	-0.01	0.04	0.002	-0.1	-0.02	0.1	0.1	0.05	0.1	0.1	-0.01
6.SOE experience	0.04	-0.03	-0.05	0.01	-0.02	1	0.03	0.01	0.01	-0.02	-0.1	-0.04	0.02	-0.05	0.1	0.04	0	-0.02
7.GDP per cap	0.01	-0.02	0.05	0.04	0.1	0.03	1	0.1	0.7	0.1	0.1	-0.1	-0.1	0.4	0.4	0.7	0.4	-0.03
8.pop density	0.3	0.02	0.02	0.02	-0.01	0.01	0.1	1	0.1	-0.1	-0.2	-0.2	-0.2	0.1	0.3	0.1	0.2	0.03
9.FDI per cap	0.1	-0.02	0.005	0.1	0.04	0.01	0.7	0.1	1	0.1	0.1	-0.1	-0.3	0.4	0.2	0.5	0.4	-0.05
10.growth rate	-0.1	0.05	0.1	-0.001	0.002	-0.02	0.1	-0.1	0.1	1	-0.02	0.03	0.03	-0.001	0.1	0.1	0.02	0.02
11.dist to Beijing	-0.1	-0.01	-0.04	0.02	-0.1	-0.1	0.1	-0.2	0.1	-0.02	1	-0.1	0.03	-0.01	-0.1	-0.1	-0.2	-0.2
12.dist to prov cap	-0.3	0.003	-0.03	-0.1	-0.02	-0.04	-0.1	-0.2	-0.1	0.03	-0.1	1	0.004	0.02	-0.03	-0.1	-0.3	-0.01
13.elevation	-0.5	-0.004	-0.04	-0.04	0.1	0.02	-0.1	-0.2	-0.3	0.03	0.03	0.004	1	-0.01	-0.02	-0.1	-0.01	0.1
14.N of power plants	0.02	0.01	-0.01	0.003	0.1	-0.05	0.4	0.1	0.4	-0.001	-0.01	0.02	-0.01	1	0.2	0.2	0.4	0.1
15.urban	-0.1	-0.1	0.1	0.01	0.05	0.1	0.4	0.3	0.2	0.1	-0.1	-0.03	-0.02	0.2	1	0.3	0.2	-0.01
16.road per cap	0.1	-0.01	0.1	0.04	0.1	0.04	0.7	0.1	0.5	0.1	-0.1	-0.1	-0.1	0.2	0.3	1	0.2	-0.03
17.taxi per cap	-0.1	0.01	-0.001	-0.001	0.1	0	0.4	0.2	0.4	0.02	-0.2	-0.3	-0.01	0.4	0.2	0.2	1	0.1
18.top 10 coal sale	0.1	0.01	0.01	-0.03	-0.01	-0.02	-0.03	0.03	-0.05	0.02	-0.2	-0.01	0.1	0.1	-0.01	-0.03	0.1	1

**Table A-3: Empirical Results from Models with Lagged Growth Rate.**

	Random Effect Models				Fixed Effect Models			
	Clust. S.E. (1)	AR1 (2)	Clust. S.E. (3)	AR1 (4)	Clust. S.E. (5)	AR1 (6)	Clust. S.E. (7)	AR1 (8)
year before turnover	0.464** (0.184)	0.480** (0.214)			0.439** (0.186)	0.468** (0.212)		
years in office			-0.924*** (0.301)	-0.899*** (0.330)			-0.918*** (0.304)	-1.218*** (0.333)
years in office <sup>2</sup>			0.157*** (0.0521)	0.157*** (0.0573)			0.153*** (0.0526)	0.205*** (0.0569)
second term	0.846* (0.449)	0.851** (0.396)	0.812* (0.476)	0.871** (0.414)	0.855* (0.448)	0.796** (0.392)	0.799* (0.475)	0.745* (0.411)
prov connect	-0.101 (0.260)	-0.0436 (0.312)	-0.117 (0.266)	-0.0609 (0.313)	-0.155 (0.254)	-0.281 (0.341)	-0.173 (0.260)	-0.309 (0.340)
SOE experience	0.658** (0.300)	0.683* (0.383)	0.633** (0.305)	0.658* (0.383)	0.590* (0.301)	0.473 (0.402)	0.563* (0.305)	0.410 (0.401)
GDP per cap	2.827 (5.172)	3.415 (5.531)	3.448 (5.238)	4.000 (5.543)	2.142 (5.107)	7.031 (7.320)	2.796 (5.188)	7.586 (7.291)
GDP per cap <sup>2</sup>	-0.195 (0.248)	-0.223 (0.271)	-0.223 (0.251)	-0.250 (0.272)	-0.158 (0.246)	-0.364 (0.354)	-0.188 (0.251)	-0.394 (0.352)
pop density	-0.237 (0.176)	0.0919 (0.278)	-0.256 (0.177)	0.0784 (0.279)	-0.575*** (0.180)	-1.192*** (0.356)	-0.599*** (0.192)	-1.211*** (0.355)
FDI per cap	0.0242 (0.101)	0.0146 (0.126)	0.0118 (0.101)	0.000681 (0.126)	0.0312 (0.0973)	0.109 (0.139)	0.0183 (0.0977)	0.0992 (0.138)
<b>lagged growth rate</b>	<b>0.0434*</b> <b>(0.0233)</b>	<b>0.0374</b> <b>(0.0269)</b>	<b>0.0406*</b> <b>(0.0234)</b>	<b>0.0350</b> <b>(0.0269)</b>	<b>0.0508**</b> <b>(0.0229)</b>	<b>0.0395</b> <b>(0.0289)</b>	<b>0.0481**</b> <b>(0.0229)</b>	<b>0.0361</b> <b>(0.0288)</b>
road per cap	0.0282 (0.0261)	0.0374 (0.0343)	0.0302 (0.0272)	0.0406 (0.0344)	0.0151 (0.0244)	0.00333 (0.0366)	0.0167 (0.0254)	0.00755 (0.0365)
urban	0.976 (0.703)	0.444 (0.830)	0.955 (0.712)	0.407 (0.832)	1.495** (0.675)	1.132 (0.848)	1.488** (0.686)	1.189 (0.846)
taxi per cap	-0.0543*** (0.0140)	-0.0805*** (0.0158)	-0.0539*** (0.0143)	-0.0808*** (0.0158)	-0.0253* (0.0141)	-0.0400** (0.0186)	-0.0242* (0.0146)	-0.0406** (0.0185)
dist to Beijing	-0.00299** (0.00125)	-0.00328*** (0.00102)	-0.00299** (0.00125)	-0.00329*** (0.00101)				
dist to prov cap	-0.0314*** (0.00523)	-0.0307*** (0.00410)	-0.0314*** (0.00524)	-0.0307*** (0.00407)				
elevation	-0.0148*** (0.00127)	-0.0145*** (0.00114)	-0.0148*** (0.00127)	-0.0146*** (0.00114)				
no. power plants	0.102 (0.0940)	0.1000 (0.0791)	0.102 (0.0942)	0.100 (0.0785)				
top 10 coal sale	8.734*** (2.852)	8.579*** (2.555)	8.765*** (2.842)	8.606*** (2.533)				
Constant	38.58 (27.26)	36.22 (28.22)	36.53 (27.59)	34.35 (28.27)	28.98 (26.47)	5.236 (4.034)	26.70 (26.85)	5.601 (4.029)
AR1		$\rho=0.149$		$\rho=0.140$		$\rho=0.149$		$\rho=0.149$
Fixed Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,578	1,578	1,578	1,578	1,578	1,351	1,578	1,351
No. prefectures	227	227	227	227	227	226	227	226
$R^2$ (within)	0.309	0.301	0.311	0.302	0.312	0.353	0.314	0.358
$R^2$ (between)	0.379	0.402	0.379	0.402				
$R^2$ (Overall)	0.367	0.388	0.369	0.388				

Note: robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; dist to Beijing, dist to prov cap, elevation, no. power plants, and top 10 coal sale are time-invariant, thus not included in the fixed effects models.

**Table A-4: Empirical Results from Models with GDP per Square kilometer.**

	Random Effect Models				Fixed Effect Models			
	Clust. S.E. (1)	AR1 (2)	Clust. S.E. (3)	AR1 (4)	Clust. S.E. (5)	AR1 (6)	Clust. S.E. (7)	AR1 (8)
year before turnover	0.404** (0.168)	0.414** (0.197)			0.392** (0.168)	0.448** (0.198)		
years in office			-0.767*** (0.290)	-0.735** (0.308)			-0.766*** (0.292)	-0.934*** (0.309)
years in office <sup>2</sup>			0.130*** (0.0503)	0.129** (0.0534)			0.128** (0.0504)	0.162*** (0.0533)
second term	0.762** (0.354)	0.746** (0.357)	0.745** (0.372)	0.779** (0.371)	0.750** (0.356)	0.850** (0.367)	0.718* (0.373)	0.865** (0.383)
prov connect	-0.196 (0.233)	-0.140 (0.274)	-0.211 (0.236)	-0.155 (0.274)	-0.197 (0.228)	-0.211 (0.304)	-0.213 (0.231)	-0.227 (0.303)
SOE experience	0.389 (0.261)	0.371 (0.330)	0.354 (0.265)	0.337 (0.331)	0.333 (0.261)	0.554 (0.366)	0.295 (0.263)	0.517 (0.365)
<i>GDP per sqr km</i>	<b>-0.309</b> (0.540)	<b>-0.269</b> (0.674)	<b>-0.309</b> (0.541)	<b>-0.280</b> (0.674)	<b>-0.535</b> (0.493)	<b>-1.300</b> (0.884)	<b>-0.532</b> (0.494)	<b>-1.321</b> (0.883)
<i>GDP per sqr km<sup>2</sup></i>	<b>-0.142</b> (0.0909)	<b>-0.225**</b> (0.113)	<b>-0.149</b> (0.0921)	<b>-0.233**</b> (0.113)	<b>-0.0365</b> (0.0813)	<b>-0.197</b> (0.149)	<b>-0.0414</b> (0.0825)	<b>-0.202</b> (0.149)
pop density	-0.181 (0.213)	-0.0174 (0.340)	-0.195 (0.216)	-0.0265 (0.341)	-0.293 (0.231)	-0.276 (0.400)	-0.310 (0.238)	-0.308 (0.399)
FDI per cap	-0.0476 (0.0885)	-0.0620 (0.113)	-0.0580 (0.0885)	-0.0736 (0.114)	-0.0158 (0.0864)	0.0470 (0.121)	-0.0263 (0.0864)	0.0341 (0.121)
growth rate	0.00713 (0.0245)	-0.00269 (0.0243)	0.00945 (0.0245)	-0.000620 (0.0244)	0.0159 (0.0247)	0.0125 (0.0254)	0.0184 (0.0248)	0.0148 (0.0254)
road per cap	-0.00491 (0.0266)	-0.00535 (0.0298)	-0.00397 (0.0279)	-0.00388 (0.0298)	-0.000746 (0.0219)	-0.00317 (0.0316)	0.000219 (0.0229)	-0.000280 (0.0316)
urban	1.187 (0.751)	0.368 (0.782)	1.201 (0.759)	0.364 (0.783)	2.118*** (0.726)	1.304 (0.817)	2.150*** (0.734)	1.287 (0.816)
taxi per cap	-0.0490*** (0.0131)	-0.0724*** (0.0143)	-0.0488*** (0.0134)	-0.0725*** (0.0143)	-0.0222* (0.0130)	-0.0357** (0.0169)	-0.0214 (0.0133)	-0.0347** (0.0169)
dist to Beijing	-0.00308** (0.00123)	-0.00331*** (0.000987)	-0.00309** (0.00123)	-0.00331*** (0.000980)				
dist to prov cap	-0.0301*** (0.00501)	-0.0286*** (0.00407)	-0.0300*** (0.00502)	-0.0286*** (0.00404)				
elevation	-0.0144*** (0.00130)	-0.0139*** (0.00113)	-0.0144*** (0.00130)	-0.0139*** (0.00112)				
no. power plants	0.0585 (0.0945)	0.0459 (0.0765)	0.0581 (0.0945)	0.0460 (0.0760)				
top 10 coal sale	8.615*** (2.942)	8.369*** (2.487)	8.616*** (2.934)	8.366*** (2.471)				
Constant	46.46*** (2.849)	47.97*** (2.330)	47.49*** (2.889)	48.94*** (2.344)	31.86*** (1.410)	8.110** (3.609)	32.87*** (1.453)	8.408** (3.632)
AR1		ρ=0.141		ρ=0.140		ρ=0.141		ρ=0.140
Fixed Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,750	1,750	1,750	1,750	1,750	1,523	1,750	1,523
No. prefectures	227	227	227	227	227	226	227	226
R <sup>2</sup> (within)	0.295	0.286	0.297	0.287	0.299	0.330	0.301	0.332
R <sup>2</sup> (between)	0.376	0.402	0.376	0.403				
R <sup>2</sup> (Overall)	0.361	0.385	0.361	0.385				

Note: robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; dist to Beijing, dist to prov cap, elevation, no. power plants, and top 10 coal sale are time-invariant, thus not included in the fixed effects models.

**Table A-5: Empirical Results from Models with Industry Output Controls.**

	Fixed Effect Models			
	AR1 (1)	AR1 (2)	AR1 (3)	AR1 (4)
year before turnover	0.405** (0.198)		0.398** (0.198)	
years in office		-0.892*** (0.309)		-0.884*** (0.309)
years in office <sup>2</sup>		0.152*** (0.0534)		0.150*** (0.0533)
second term	0.912** (0.367)	0.903** (0.382)	0.899** (0.367)	0.886** (0.382)
<i>industrial output by area</i>	<b>-0.321</b> <b>(0.360)</b>	<b>-0.327</b> <b>(0.359)</b>		
<i>industrial output per cap</i>			<b>-0.0203</b> <b>(0.0673)</b>	<b>-0.0225</b> <b>(0.0672)</b>
prov connect	-0.207 (0.303)	-0.223 (0.302)	-0.195 (0.303)	-0.211 (0.302)
SOE experience	0.538 (0.366)	0.502 (0.365)	0.531 (0.366)	0.495 (0.365)
GDP per cap	3.563 (6.665)	3.534 (6.649)	4.882 (7.714)	4.740 (7.699)
GDP per cap <sup>2</sup>	-0.200 (0.327)	-0.198 (0.326)	-0.264 (0.388)	-0.256 (0.387)
pop density	-0.566* (0.318)	-0.596* (0.317)	-0.676** (0.294)	-0.707** (0.294)
FDI per cap	0.0485 (0.122)	0.0355 (0.122)	0.0430 (0.122)	0.0298 (0.122)
growth rate	0.0143 (0.0258)	0.0168 (0.0258)	0.0135 (0.0258)	0.0159 (0.0258)
road per cap	0.00234 (0.0337)	0.00465 (0.0337)	0.00594 (0.0339)	0.00808 (0.0339)
urban	1.233 (0.802)	1.225 (0.801)	1.319* (0.801)	1.316 (0.800)
taxi per cap	-0.0364** (0.0169)	-0.0354** (0.0168)	-0.0372** (0.0169)	-0.0362** (0.0168)
Constant	4.076 (3.536)	4.348 (3.561)	4.029 (3.509)	4.301 (3.532)
AR1	ρ=0.141	ρ=0.140	ρ=0.143	ρ=0.142
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,520	1,520	1,520	1,520
No. prefectures	226	226	226	226
R <sup>2</sup> (within)	0.339	0.341	0.339	0.341

Note: robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.