Table 1: Summary Statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| VarName | Obs | Mean | SD | Min | Max |
| Connect | 2680 | 0.55 | 0.50 | 0.00 | 1.00 |
| ln\_ManipulationSO2 | 2509 | 9.47 | 2.78 | 0.54 | 20.39 |
| ln\_SatelliteSO2 | 2530 | 1.18 | 2.54 | -9.88 | 6.38 |
| ln\_OfficialSO2 | 2659 | 10.65 | 1.03 | 0.69 | 13.12 |
| ln\_GDPper | 2680 | 5.42 | 0.74 | -0.14 | 8.38 |
| GDPgrowth | 2680 | 12.75 | 3.77 | -19.38 | 37.00 |
| Ratio\_Second | 2667 | 50.37 | 10.72 | 9.00 | 90.97 |
| ln\_Industry | 2679 | 11.46 | 1.23 | 7.16 | 14.84 |
| ln\_Retail | 2680 | 10.12 | 1.05 | 6.95 | 13.40 |
| ln\_Populatoin | 2680 | 5.85 | 0.68 | 2.85 | 7.12 |
| ln\_Popdensity | 2680 | 5.76 | 0.87 | 1.55 | 7.88 |
| Temperature | 2670 | 14.27 | 5.36 | -0.72 | 25.73 |
| Precipitation | 2670 | 81.49 | 40.73 | 3.94 | 249.49 |
| Cloud | 2670 | 61.78 | 10.47 | 30.70 | 81.07 |

Table 1: Summary Statistics (PM2.5)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| VarName | Obs | Mean | SD | Min | Max |
| ln\_ManipulationPM25 | 421 | 0.18 | 0.26 | -0.74 | 1.00 |
| ln\_SatellitePM25 | 536 | 3.74 | 0.40 | 2.30 | 4.67 |
| ln\_OfficialPM25 | 421 | 3.95 | 0.36 | 2.80 | 4.87 |

Table 2: Baseline Results for SO2 Data Manipulation

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|  | ln\_ManipulationSO2 | ln\_ManipulationSO2 | ln\_ManipulationSO2 | ln\_SatelliteSO2 | ln\_SatelliteSO2 | ln\_SatelliteSO2 | ln\_OfficialSO2 | ln\_OfficialSO2 | ln\_OfficialSO2 |
| Connect | -0.048\*\* | -0.046\* | -0.046\*\* | 0.015\*\*\* | 0.013\*\*\* | 0.012\*\*\* | -0.038\* | -0.037\* | -0.038\* |
|  | (0.045) | (0.056) | (0.045) | (0.002) | (0.004) | (0.001) | (0.087) | (0.095) | (0.082) |
| ln\_GDPper |  | -0.055 | -0.087 |  | -0.038 | -0.002 |  | -0.097 | -0.089 |
|  |  | (0.515) | (0.320) |  | (0.328) | (0.884) |  | (0.261) | (0.304) |
| GDPgrowth |  | 0.010\*\* | 0.009\*\* |  | -0.002\*\* | -0.001 |  | 0.010\*\* | 0.010\*\* |
|  |  | (0.033) | (0.047) |  | (0.037) | (0.144) |  | (0.020) | (0.022) |
| Ratio\_Second |  | 0.003 | 0.003 |  | -0.003\*\*\* | -0.003\*\*\* |  | -0.000 | -0.000 |
|  |  | (0.655) | (0.655) |  | (0.002) | (0.001) |  | (0.978) | (0.989) |
| ln\_Industry |  | 0.062 | 0.085 |  | 0.070\*\*\* | 0.046\*\*\* |  | 0.115 | 0.114 |
|  |  | (0.562) | (0.423) |  | (0.002) | (0.006) |  | (0.247) | (0.252) |
| ln\_Retail |  | -0.214\*\* | -0.183\*\* |  | 0.035\* | -0.006 |  | -0.176\*\* | -0.185\*\* |
|  |  | (0.013) | (0.029) |  | (0.075) | (0.510) |  | (0.033) | (0.028) |
| ln\_Populatoin |  |  | -0.899\*\* |  |  | 1.037\*\*\* |  |  | 0.240 |
|  |  |  | (0.023) |  |  | (0.000) |  |  | (0.496) |
| ln\_Popdensity |  |  | 0.662 |  |  | -1.069\*\*\* |  |  | -0.298 |
|  |  |  | (0.209) |  |  | (0.000) |  |  | (0.515) |
| Temperature |  |  | 0.039 |  |  | -0.015\*\*\* |  |  | 0.027 |
|  |  |  | (0.153) |  |  | (0.003) |  |  | (0.253) |
| Precipitation |  |  | 0.001 |  |  | 0.000\*\* |  |  | 0.001 |
|  |  |  | (0.342) |  |  | (0.044) |  |  | (0.254) |
| Cloud |  |  | -0.002 |  |  | -0.000 |  |  | -0.002 |
|  |  |  | (0.685) |  |  | (0.611) |  |  | (0.742) |
| \_cons | 9.496\*\*\* | 10.992\*\*\* | 11.553\*\* | 1.170\*\*\* | 0.390 | 1.177\* | 10.668\*\*\* | 11.553\*\*\* | 11.576\*\*\* |
|  | (0.000) | (0.000) | (0.021) | (0.000) | (0.194) | (0.079) | (0.000) | (0.000) | (0.009) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| City FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| r2\_a | 0.977 | 0.977 | 0.978 | 0.999 | 0.999 | 0.999 | 0.841 | 0.843 | 0.843 |
| N\_clust | 253 | 252 | 252 | 253 | 252 | 252 | 268 | 267 | 267 |
| N | 2509 | 2495 | 2495 | 2530 | 2516 | 2516 | 2659 | 2645 | 2645 |

Table 3: The Impact of Connections to Provincial Environmental Administrators on Data Manipulation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
|  | ln\_ManipulationSO2 | ln\_ManipulationSO2 | ln\_SatelliteSO2 | ln\_SatelliteSO2 | ln\_OfficialSO2 | ln\_OfficialSO2 |
| Connect\_Csec\_Environ | -0.077\*\*\* | -0.076\*\*\* | 0.009\*\* | 0.010\*\*\* | -0.064\*\*\* | -0.063\*\* |
|  | (0.002) | (0.003) | (0.034) | (0.005) | (0.007) | (0.011) |
| Economic Controls | No | Yes | No | Yes | No | Yes |
| Population Controls | No | Yes | No | Yes | No | Yes |
| Weather Controls | No | Yes | No | Yes | No | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| City FE | Yes | Yes | Yes | Yes | Yes | Yes |
| r2\_a | 0.977 | 0.978 | 0.999 | 0.999 | 0.841 | 0.843 |
| N\_clust | 253 | 252 | 253 | 252 | 268 | 267 |
| N | 2509 | 2495 | 2530 | 2516 | 2659 | 2645 |

Table 4: The Impact of Age Effect

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
|  | ln\_ManipulationSO2 | ln\_SatelliteSO2 | ln\_OfficialSO2 |
| Connect | -7.298\* | -1.352\*\* | -8.352\*\* |
|  | (0.081) | (0.025) | (0.041) |
| CitysecAge | -0.151 | -0.039\* | -0.180 |
|  | (0.249) | (0.067) | (0.169) |
| CitysecAge2 | 0.002 | 0.000\* | 0.002 |
|  | (0.230) | (0.083) | (0.158) |
| ConnectxCitysecAge | 0.288\* | 0.050\*\* | 0.327\*\* |
|  | (0.077) | (0.034) | (0.039) |
| ConnectxCitysecAge2 | -0.003\* | -0.000\*\* | -0.003\*\* |
|  | (0.072) | (0.047) | (0.038) |
| Economic Controls | Yes | Yes | Yes |
| Population Controls | Yes | Yes | Yes |
| Weather Controls | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| City FE | Yes | Yes | Yes |
| r2\_a | 0.978 | 0.999 | 0.843 |
| N\_clust | 252 | 252 | 267 |
| N | 2485 | 2506 | 2634 |

Table 6: Personal Characteristic Effect

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
|  | ln\_ManipulationSO2 | ln\_SatelliteSO2 | ln\_OfficialSO2 |
| Connect | -0.047\*\* | 0.013\*\*\* | -0.038\* |
|  | (0.044) | (0.000) | (0.089) |
| Edu\_Bachelor | -0.014 | 0.006 | -0.005 |
|  | (0.672) | (0.215) | (0.869) |
| Exp\_University | 0.064 | -0.026 | 0.040 |
|  | (0.418) | (0.124) | (0.612) |
| Exp\_Central | 0.077 | -0.019\*\* | 0.052 |
|  | (0.258) | (0.028) | (0.437) |
| Exp\_Youth | -0.033 | 0.006 | -0.024 |
|  | (0.352) | (0.330) | (0.483) |
| Exp\_County | 0.059\* | -0.001 | 0.062\*\* |
|  | (0.052) | (0.897) | (0.032) |
| Exp\_Enterprise | 0.040 | 0.000 | 0.038 |
|  | (0.234) | (0.968) | (0.248) |
| Exp\_Finance | 0.046 | -0.020\*\* | 0.016 |
|  | (0.392) | (0.017) | (0.755) |
| Economic Controls | Yes | Yes | Yes |
| Population Controls | Yes | Yes | Yes |
| Weather Controls | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| City FE | Yes | Yes | Yes |
| r2\_a | 0.978 | 0.999 | 0.843 |
| N\_clust | 252 | 252 | 267 |
| N | 2477 | 2498 | 2626 |

Table 7: Robustness Test of High FE

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
|  | ln\_ManipulationSO2 | ln\_SatelliteSO2 | ln\_OfficialSO2 |
| Connect | -0.056\*\* | 0.005 | -0.051\*\* |
|  | (0.026) | (0.205) | (0.035) |
| Economic Controls | Yes | Yes | Yes |
| Population Controls | Yes | Yes | Yes |
| Weather Controls | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| City FE | Yes | Yes | Yes |
| Province×Year FE | Yes | Yes | Yes |
| r2\_a | 0.980 | 1.000 | 0.860 |
| N\_clust | 251 | 251 | 266 |
| N | 2483 | 2506 | 2633 |

Table 8: Other Types of Connections

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|  | ln\_ManipulationSO2 | ln\_ManipulationSO2 | ln\_ManipulationSO2 | ln\_SatelliteSO2 | ln\_SatelliteSO2 | ln\_SatelliteSO2 | ln\_OfficialSO2 | ln\_OfficialSO2 | ln\_OfficialSO2 |
| work | 0.012 |  |  | 0.002 |  |  | 0.013 |  |  |
|  | (0.775) |  |  | (0.805) |  |  | (0.744) |  |  |
| school |  | -0.076 |  |  | 0.033\*\*\* |  |  | -0.040 |  |
|  |  | (0.161) |  |  | (0.003) |  |  | (0.451) |  |
| hometown |  |  | 0.031 |  |  | 0.010 |  |  | 0.038 |
|  |  |  | (0.477) |  |  | (0.168) |  |  | (0.342) |
| Economic Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Population Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Weather Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| City FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| r2\_a | 0.978 | 0.978 | 0.978 | 0.999 | 0.999 | 0.999 | 0.843 | 0.843 | 0.843 |
| N\_clust | 252 | 252 | 252 | 252 | 252 | 252 | 267 | 267 | 267 |
| N | 2495 | 2495 | 2495 | 2516 | 2516 | 2516 | 2645 | 2645 | 2645 |

Table 5: Robustness Test by PM2.5

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
|  | ln\_ManipulationPM25 | ln\_SatellitePM25 | ln\_OfficialPM25 |
| Connect | -0.056\*\*\* | 0.001 | -0.066\*\*\* |
|  | (0.007) | (0.950) | (0.004) |
| Economic Controls | Yes | Yes | Yes |
| Population Controls | Yes | Yes | Yes |
| Weather Controls | Yes | Yes | Yes |
| Province FE | Yes | Yes | Yes |
| r2\_a | 0.452 | 0.757 | 0.728 |
| N\_clust | 26 | 26 | 26 |
| N | 419 | 533 | 419 |