**Supplemental Material**

Table A1: Variable definitions

|  |  |
| --- | --- |
| **Variable** | **Definition** |
| Sales ($SA\_{it}$) | Total sales in a year, at the firm level. |
| Total assets ($AS\_{it}$) | Total assets in a year, at the firm level. |
| R&D intensity ($RDI\_{it}$) | R&D expenses per capita in a year, at the firm level, in logs. |
| R&D expenses ($RDE\_{it}$) | R&D expenses in a year, at the firm level, in logs. |
| New product ratio ($NPR\_{it}$) | Output of new product relative to total output at the firm level, in a year. |
| New product amount ($NPA\_{it}$) | Output of new product in a year, at the firm level, in logs. |
| Firm size ($SIZ\_{it}$) | The average number of employees per year in a firm, in logs. |
| Capital intensity ($CAP\_{it}$) | Total assets, in thousands of RMB, relative to the average number of employees in a firm, by using ‘winsor’ command in Stata at 1st and 99th percentiles. |
|  |
| Export intensity ($EXP\_{it}$) | Total revenues from export, relative to total sales of the firm, by using ‘winsor’ command in Stata at 1st and 99th percentiles. |
|  |
| Firm age ($AGE\_{it}$) | Firm age, in logs, by using ‘winsor’ command in Stata at 1st and 99th percentiles. |
| Advertisement intensity ($ADV\_{it}$) | Total advertisement expenses relative to total employees in a firm, by using ‘winsor’ command in Stata at 1st and 99th percentiles, in logs. |
|  |
| State-owned enterprise ($SOE\_{it}$) | If a firm is a state-owned enterprise, the variable is equal to 1, otherwise it is 0. |
| Herfindahl–Hirschman index ($HHI\_{mt}$) | $ HHI\_{mt}$*=*$\sum\_{it}^{}(SA\_{it}/SA\_{mt})^{2}$, where industry *m* is defined at 3-digit level. |

Table A2: Summary statistics

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Obs. | Mean | Std. Dev. | Minimum | Median | Maximum |
| **Panel A: Innovation indicators** |
| $$RDI\_{it}$$ | 41,049 | 0.098 | 0.399 | 0.000 | 0.000 | 2.793 |
| $$RDE\_{it}$$ | 41,047 | 0.568 | 1.824 | 0.000 | 0.000 | 14.548 |
| $$NPR\_{it}$$ | 41,049 | 0.024 | 0.125 | 0.000 | 0.000 | 1.000 |
| $$NPA\_{it}$$ | 41,049 | 0.591 | 2.418 | 0.000 | 0.000 | 17.640 |
| **Panel B: Control variables** |
| **Panel B-1: Spatial lag of innovation indicators (spatial lag of Y)** |
| $$∑\_{j=1, j\ne i}^{J}w\_{ij}RDI\_{jt}$$ | 41,049 | 10.296 | 35.868 | 1.970 | 7.660 | 2724.376 |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}RDE\_{jt}$$ | 41,049 | 57.570 | 129.816 | 12.500 | 45.877 | 9914.351 |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}NPR\_{jt}$$ | 41,049 | 2.927 | 5.196 | 0.660 | 2.052 | 354.786 |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}NPA\_{jt}$$ | 41,049 | 73.772 | 172.096 | 15.926 | 52.221 | 15046.066 |
| **Panel B-2: Firm-level FDI measures**　 |
| $Z\_{it}^{IFDI}$ *(employee)* | 41,049 | 0.001 | 0.011 | 0.000 | 0.000 | 0.604 |
| $Z\_{it}^{IFDI}$ *(sales)* | 41,049 | 0.001 | 0.013 | 0.000 | 0.000 | 0.852 |
| $Z\_{it}^{IFDI}$ *(assets)* | 41,049 | 0.001 | 0.014 | 0.000 | 0.000 | 0.860 |
| $Z\_{it}^{OFDI}$ *(employee)* | 41,049 | 0.001 | 0.025 | 0.000 | 0.000 | 1.000 |
| $Z\_{it}^{OFDI}$ *(sales)* | 41,049 | 0.001 | 0.026 | 0.000 | 0.000 | 1.000 |
| $Z\_{it}^{OFDI}$ *(assets)* | 41,049 | 0.001 | 0.027 | 0.000 | 0.000 | 1.000 |
| **Panel B-3: Firm, sector, and region characteristics** |
| $$SIZ\_{it}$$ | 41,049 | 4.833 | 1.078 | 2.079 | 4.718 | 10.519 |
| $$CAP\_{it}$$ | 41,049 | 3.871 | 1.151 | -0.025 | 3.909 | 6.539 |
| $$EXP\_{it}$$ | 41,049 | 0.128 | 0.295 | 0.000 | 0.000 | 1.000 |
| $$AGE\_{it}$$ | 41,049 | 1.881 | 0.746 | 0.000 | 1.792 | 3.932 |
| $$SOE\_{it}$$ | 41,049 | 0.270 | 0.444 | 0.000 | 0.000 | 1.000 |
| $$HHI\_{mt}$$ | 41,049 | 0.007 | 0.011 | 0.001 | 0.004 | 0.300 |
| $$RAT\_{ct}$$ | 41,049 | 0.039 | 0.094 | 0.000 | 0.000 | 1.000 |
| **Panel C: Firm-level FDI spillover measures (spatial lag of X)** |
| $∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$ *(employee)* | 41,049 | 0.136 | 0.845 | 0.028 | 0.100 | 155.652 |
| $∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$ *(sales)* | 41,049 | 0.152 | 2.090 | 0.025 | 0.105 | 307.843 |
| $∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$ *(assets)* | 41,049 | 0.157 | 0.757 | 0.031 | 0.115 | 120.115 |
| $∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$ *(employee)* | 41,049 | 0.133 | 0.240 | 0.021 | 0.087 | 18.464 |
| $∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$ *(sales)* | 41,049 | 0.136 | 0.235 | 0.022 | 0.089 | 16.081 |
| $∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$ *(assets)* | 41,049 | 0.144 | 0.271 | 0.023 | 0.093 | 23.592 |

Notes: (1) The dataset is over 2002–2007. (2) Panel B-1 and Panel C display the spatial lagged variables with non-truncated distance weight matrices.

Table A3: The impacts of IFDI and OFDI spatial spillovers on innovation input (2)

|  |  |
| --- | --- |
| Variable | Dependent variable: $RDE\_{it}$ |
| 　 | Panel A: No truncated | Panel B: 100km |
| 　 | A-1 | A-2 | A-3 | B-1 | B-2 | B-3 |
| 　 | Employee | Sales | Assets | Employee | Sales | Assets |
| $$RDE\_{it-1}$$ | 0.3994\*\*\* | 0.3995\*\*\* | 0.3993\*\*\* | 0.3994\*\*\* | 0.3995\*\*\* | 0.3993\*\*\* |
| 　 | (0.0194) | (0.0194) | (0.0194) | (0.0194) | (0.0194) | (0.0194) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}RDE\_{jt}$$ | 0.0003 | 0.0003 | 0.0003 | 0.0003\* | 0.0003 | 0.0003\*  |
| 　 | (0.0002) | (0.0002) | (0.0002) | (0.0002) | (0.0002) | (0.0002) |
| $$Z\_{it}^{IFDI}$$ | 2.4032\* | 2.7272\* | 3.4548\*\*\* | 2.4002\* | 2.7227\* | 3.4518\*\*\* |
|  | (1.3812) | (1.3971) | (1.2308) | (1.3807) | (1.3964) | (1.2301) |
| $$Z\_{it}^{OFDI}$$ | 2.0589\*\*\* | 2.1278\*\*\* | 1.6405\*\*\* | 2.0582\*\*\* | 2.1271\*\*\* | 1.6400\*\*\* |
|  | (0.6647) | (0.6695) | (0.6317) | (0.6646) | (0.6694) | (0.6316) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$$ | 0.0442\*\*\* | 0.0193\*\*\* | 0.0570\*\*\* | 0.0443\*\*\* | 0.0194\*\*\* | 0.0573\*\*\* |
|  | (0.0024) | (0.0005) | (0.0027) | (0.0023) | (0.0005) | (0.0027) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$$ | 0.1466\*\*\* | 0.1323\*\*\* | 0.1209\*\*\* | 0.1471\*\*\* | 0.1335\*\*\* | 0.1226\*\*\* |
|  | (0.0474) | (0.0507) | (0.0403) | (0.0470) | (0.0502) | (0.0402) |
| $$SIZ\_{it}$$ | 0.2829\*\*\* | 0.2823\*\*\* | 0.2806\*\*\* | 0.2827\*\*\* | 0.2822\*\*\* | 0.2804\*\*\* |
|  | (0.0135) | (0.0134) | (0.0134) | (0.0135) | (0.0134) | (0.0134) |
| $$CAP\_{it}$$ | 0.0938\*\*\* | 0.0922\*\*\* | 0.0910\*\*\* | 0.0939\*\*\* | 0.0922\*\*\* | 0.0910\*\*\* |
|  | (0.0083) | (0.0083) | (0.0082) | (0.0083) | (0.0083) | (0.0082) |
| $$EXP\_{it}$$ | -0.1116\*\*\* | -0.1087\*\*\* | -0.1103\*\*\* | -0.1122\*\*\* | -0.1093\*\*\* | -0.1110\*\*\* |
|  | (0.0263) | (0.0263) | (0.0262) | (0.0264) | (0.0263) | (0.0262) |
| $$AGE\_{it}$$ | 0.0928\*\*\* | 0.0933\*\*\* | 0.0921\*\*\* | 0.0927\*\*\* | 0.0932\*\*\* | 0.0919\*\*\* |
|  | (0.0139) | (0.0139) | (0.0139) | (0.0139) | (0.0139) | (0.0139) |
| $$SOE\_{it}$$ | 0.2163\*\*\* | 0.2169\*\*\* | 0.2178\*\*\* | 0.2165\*\*\* | 0.2171\*\*\* | 0.2180\*\*\* |
|  | (0.0210) | (0.0211) | (0.0210) | (0.0210) | (0.0211) | (0.0210) |
| $$HHI\_{mt}$$ | 3.9590\*\*\* | 3.9553\*\*\* | 3.9496\*\*\* | 3.9594\*\*\* | 3.9546\*\*\* | 3.9494\*\*\* |
|  | (0.9758) | (0.9734) | (0.9723) | (0.9759) | (0.9735) | (0.9724) |
| $$RAT\_{ct}$$ | 0.0814 | 0.0822 | 0.0840 | 0.0813 | 0.0820 | 0.0837 |
|  | (0.0726) | (0.0726) | (0.0727) | (0.0726) | (0.0726) | (0.0727) |
| *Firm dummy* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Year dummy* | Yes | Yes | Yes | Yes | Yes | Yes |
| Number of observations |  41,046  |  41,046  |  41,046  |  41,046  |  41,046  |  41,046  |
| Number of firms |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |

Notes: (1) Employee, sales, and total assets are employed to capture the spatial spillovers, respectively. (2) The inverse-haversine distance matrices of non-truncated and truncated forms at 100 km are used in Panels A and B, respectively. (3) \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively. (4) Robust standard errors are in parentheses.

Table A4: The impacts of one-period lagged IFDI and OFDI spatial spillovers on innovation input

|  |  |
| --- | --- |
| Variable | Dependent variable: $RDI\_{it}$ |
| 　 | Panel A: No truncated | Panel B: 100km |
| 　 | A-1 | A-2 | A-3 | B-1 | B-2 | B-3 |
| 　 | Employee | Sales | Assets | Employee | Sales | Assets |
| $$RDI\_{it-1}$$ | 0.5234\*\*\* | 0.5240\*\*\* | 0.5238\*\*\* | 0.5234\*\*\* | 0.5239\*\*\* | 0.5238\*\*\* |
|  | (0.0258) | (0.0258) | (0.0258) | (0.0258) | (0.0258) | (0.0258) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}RDI\_{jt}$$ | 0.0002\* | 0.0002\* | 0.0002\* | 0.0002\* | 0.0002\* | 0.0002\*  |
|  | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| $$Z\_{it-1}^{IFDI}$$ | 0.0744 | 0.2265 | 0.2987 | 0.0740 | 0.2259 | 0.2983 |
|  | (0.2319) | (0.2328) | (0.2283) | (0.2318) | (0.2328) | (0.2282) |
| $$Z\_{it-1}^{OFDI}$$ | 0.2581\* | 0.2540\* | 0.2565\*\* | 0.2580\* | 0.2539\* | 0.2565\*\*  |
|  | (0.1397) | (0.1432) | (0.1293) | (0.1396) | (0.1432) | (0.1293) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt-1}^{IFDI}$$ | 0.0031\*\*\* | 0.0026\*\*\* | 0.0063\*\*\* | 0.0032\*\*\* | 0.0026\*\*\* | 0.0063\*\*\* |
|  | (0.0010) | (0.0003) | (0.0017) | (0.0010) | (0.0003) | (0.0017) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt-1}^{OFDI}$$ | 0.0222\* | 0.0251\*\* | 0.0164 | 0.0226\* | 0.0256\*\* | 0.0168 |
|  | (0.0116) | (0.0108) | (0.0103) | (0.0116) | (0.0108) | (0.0104) |
| $$SIZ\_{it}$$ | 0.0291\*\*\* | 0.0287\*\*\* | 0.0284\*\*\* | 0.0291\*\*\* | 0.0287\*\*\* | 0.0284\*\*\* |
|  | (0.0025) | (0.0024) | (0.0024) | (0.0025) | (0.0024) | (0.0024) |
| $$CAP\_{it}$$ | 0.0167\*\*\* | 0.0165\*\*\* | 0.0163\*\*\* | 0.0167\*\*\* | 0.0165\*\*\* | 0.0164\*\*\* |
|  | (0.0019) | (0.0019) | (0.0019) | (0.0019) | (0.0019) | (0.0019) |
| $$EXP\_{it}$$ | -0.0176\*\*\* | -0.0178\*\*\* | -0.0177\*\*\* | -0.0177\*\*\* | -0.0179\*\*\* | -0.0178\*\*\* |
|  | (0.0056) | (0.0056) | (0.0056) | (0.0056) | (0.0056) | (0.0056) |
| $$AGE\_{it}$$ | 0.0117\*\*\* | 0.0116\*\*\* | 0.0116\*\*\* | 0.0117\*\*\* | 0.0115\*\*\* | 0.0116\*\*\* |
|  | (0.0029) | (0.0029) | (0.0029) | (0.0029) | (0.0029) | (0.0029) |
| $$SOE\_{it}$$ | 0.0371\*\*\* | 0.0373\*\*\* | 0.0374\*\*\* | 0.0371\*\*\* | 0.0373\*\*\* | 0.0374\*\*\* |
|  | (0.0047) | (0.0047) | (0.0047) | (0.0047) | (0.0047) | (0.0047) |
| $$HHI\_{mt}$$ | 0.8295\*\*\* | 0.8265\*\*\* | 0.8251\*\*\* | 0.8294\*\*\* | 0.8264\*\*\* | 0.8250\*\*\* |
|  | (0.2024) | (0.2019) | (0.2019) | (0.2024) | (0.2019) | (0.2019) |
| $$RAT\_{ct}$$ | 0.0146 | 0.0148 | 0.0150 | 0.0146 | 0.0148 | 0.0150 |
|  | (0.0160) | (0.0159) | (0.0160) | (0.0160) | (0.0159) | (0.0160) |
| *Firm dummy* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Year dummy* | Yes | Yes | Yes | Yes | Yes | Yes |
| Number of observations |  41,049  |  41,049  |  41,049  |  41,049  |  41,049  |  41,049  |
| Number of firms |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |

Notes: (1) Employee, sales, and total assets are employed to capture the spatial spillovers, respectively. (2) $Z\_{it-1}^{IFDI}$, $Z\_{it-1}^{OFDI}$, $∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt-1}^{IFDI}$, and $∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt-1}^{OFDI}$ are one-period lagged items. (3) The inverse-haversine distance matrices of non-truncated and truncated forms at 100 km are used in Panels A and B, respectively. (4) \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively. (5) Robust standard errors are in parentheses.

Table A5: The impacts of IFDI and OFDI spatial spillovers on innovation input based on different truncated matrices

|  |  |
| --- | --- |
| Variable | Dependent variable: $RDI\_{it}$ |
| 　 | (1) | (2) | (3) | (4) | (5) |
| 　 | 600 km | 550 km | 500 km | 450 km | 400 km |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$$ | 0.0119\*\*\* | 0.0119\*\*\* | 0.0119\*\*\* | 0.0119\*\*\* | 0.0119\*\*\* |
| 　 | (0.0009) | (0.0009) | (0.0009) | (0.0009) | (0.0009) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$$ | 0.0226\*\* | 0.0226\*\* | 0.0226\*\* | 0.0225\*\* | 0.0224\*\* |
| 　 | (0.0092) | (0.0093) | (0.0093) | (0.0092) | (0.0092) |
| 　 | (6) | (7) | (8) | (9) | (10) |
| 　 | 350 km | 300 km | 250 km | 200 km | 150 km |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$$ | 0.0118\*\*\* | 0.0118\*\*\* | 0.0118\*\*\* | 0.0118\*\*\* | 0.0119\*\*\* |
| 　 | (0.0009) | (0.0009) | (0.0009) | (0.0009) | (0.0009) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$$ | 0.0220\*\* | 0.0215\*\* | 0.0207\*\* | 0.0214\*\* | 0.0221\*\* |
| 　 | (0.0091) | (0.0090) | (0.0089) | (0.0090) | (0.0091) |
| 　 | (11) | (12) | (13) | (14) | (15) |
| 　 | 100 km | 75 km | 50 km | 25 km | 10 km |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$$ | 0.0119\*\*\* | 0.0119\*\*\* | 0.0120\*\*\* | 0.0121\*\*\* | 0.0121\*\*\* |
| 　 | (0.0009) | (0.0008) | (0.0008) | (0.0007) | (0.0007) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$$ | 0.0237\*\* | 0.0236\*\* | 0.0252\*\*\* | 0.0275\*\*\* | 0.0268\*\*\* |
| 　 | (0.0094) | (0.0094) | (0.0097) | (0.0103) | (0.0103) |

Notes: (1) Employee is employed to capture the spatial spillovers in all specifications. (2) The inverse-haversine distance matrices of truncated forms are from 600 km to 10 km, respectively. (3) \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively. (4) Robust standard errors are in parentheses. (5) Other control variables are omitted in the table.

Table A6: The results of placebo test 1 (randomly selected fictitious I(O)FDI firms)

|  |  |
| --- | --- |
| Variable | Dependent variable: $RDI\_{it}$ |
| 　 | Panel A: No truncated | Panel B: 100km |
| 　 | A-1 | A-2 | A-3 | B-1 | B-2 | B-3 |
| 　 | Employee | Sales | Assets | Employee | Sales | Assets |
| $$RDI\_{it-1}$$ | 0.5238\*\*\* | 0.5238\*\*\* | 0.5236\*\*\* | 0.5237\*\*\* | 0.5238\*\*\* | 0.5235\*\*\* |
|  | (0.0259) | (0.0259) | (0.0259) | (0.0259) | (0.0259) | (0.0259) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}RDI\_{jt}$$ | 0.0002\* | 0.0002 | 0.0002 | 0.0002\* | 0.0002 | 0.0002 |
|  | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| $$Z\_{it}^{IFDI}$$ | 0.2387 | 0.2593 | 0.2893 | 0.2379 | 0.2569 | 0.2877 |
|  | (0.2308) | (0.1874) | (0.2313) | (0.2306) | (0.1872) | (0.2312) |
| $$Z\_{it}^{OFDI}$$ | -0.0051 | -0.0493 | -0.0115 | -0.0051 | -0.0493 | -0.0115 |
|  | (0.0357) | (0.0686) | (0.1145) | (0.0357) | (0.0686) | (0.1145) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$$ | 0.0006 | 0.0001 | 0.0001 | 0.0006 | 0.0001 | 0.0001 |
|  | (0.0005) | (0.0001) | (0.0001) | (0.0005) | (0.0001) | (0.0001) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$$ | 0.0011 | 0.0000 | 0.0000 | 0.0011 | 0.0000 | 0.0000 |
|  | (0.0012) | (0.0003) | (0.0000)  | (0.0013) | (0.0003) | (0.0000)  |
| $$SIZ\_{it}$$ | 0.0294\*\*\* | 0.0293\*\*\* | 0.0292\*\*\* | 0.0293\*\*\* | 0.0293\*\*\* | 0.0292\*\*\* |
|  | (0.0025) | (0.0025) | (0.0025) | (0.0025) | (0.0025) | (0.0025) |
| $$CAP\_{it}$$ | 0.0169\*\*\* | 0.0168\*\*\* | 0.0167\*\*\* | 0.0169\*\*\* | 0.0168\*\*\* | 0.0167\*\*\* |
|  | (0.0019) | (0.0019) | (0.0019) | (0.0019) | (0.0019) | (0.0019) |
| $$EXP\_{it}$$ | -0.0155\*\*\* | -0.0154\*\*\* | -0.0154\*\*\* | -0.0155\*\*\* | -0.0154\*\*\* | -0.0155\*\*\* |
|  | (0.0055) | (0.0055) | (0.0055) | (0.0055) | (0.0055) | (0.0055) |
| $$AGE\_{it}$$ | 0.0124\*\*\* | 0.0124\*\*\* | 0.0125\*\*\* | 0.0124\*\*\* | 0.0124\*\*\* | 0.0124\*\*\* |
|  | (0.0029) | (0.0029) | (0.0029) | (0.0029) | (0.0029) | (0.0029) |
| $$SOE\_{it}$$ | 0.0369\*\*\* | 0.0369\*\*\* | 0.0368\*\*\* | 0.0369\*\*\* | 0.0369\*\*\* | 0.0368\*\*\* |
|  | (0.0047) | (0.0047) | (0.0047) | (0.0047) | (0.0047) | (0.0047) |
| $$HHI\_{mt}$$ | 0.8323\*\*\* | 0.8314\*\*\* | 0.8308\*\*\* | 0.8323\*\*\* | 0.8315\*\*\* | 0.8308\*\*\* |
|  | (0.2032) | (0.2032) | (0.2033) | (0.2032) | (0.2032) | (0.2033) |
| $$RAT\_{ct}$$ | 0.0167 | 0.0168 | 0.0168 | 0.0167 | 0.0168 | 0.0168 |
|  | (0.0160) | (0.0160) | (0.0160) | (0.0160) | (0.0160) | (0.0160) |
| *Firm dummy* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Year dummy* | Yes | Yes | Yes | Yes | Yes | Yes |
| Number of observations |  41,049  |  41,049  |  41,049  |  41,049  |  41,049  |  41,049  |
| Number of firms |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |

Notes: (1) Employee, sales, and total assets are employed to capture the spatial spillovers, respectively. (2) The inverse-haversine distance matrices of non-truncated and truncated forms at 100 km are used in Panels A and B, respectively. (3) \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively. (4) Robust standard errors are in parentheses.

Table A7: PSM details in placebo test 2

|  |
| --- |
| Panel A: Logit model: I(O)FDI firms (Yes/No) |
| Variable | IFDI | OFDI |
| 　 | (1) | (2) |
| $$SIZ\_{i}$$ | 0.7384\*\*\* | 0.7407\*\*\* |
| 　 | (0.0202) | (0.0680) |
| $$CAP\_{i}$$ | 0.3092\*\*\* | 0.3231\*\*\* |
| 　 | (0.0170) | (0.0794) |
| $$EXP\_{i}$$ | 2.8774\*\*\* | 1.0783\*\*\* |
| 　 | (0.0628) | (0.2494) |
| $$AGE\_{i}$$ | 0.1304\*\*\* | 0.2998\*\*\* |
| 　 | (0.0243) | (0.1052) |
| $$SOE\_{i}$$ | -3.2794 | 0.1901 |
| 　 | (0.0733) | (0.2134) |
| $$HHI\_{m}$$ | 0.8978 | -11.5846 |
| 　 | (1.3646) | (11.4722) |
| *Industry* | Yes | Yes |
| *Region* | Yes | Yes |
| Number of firms | 41,217 | 23,385 |
| Pseudo-$R^{2}$ | 0.423 | 0.186 |
| Log likelihood | -11113.49 | -859.23 |
| Panel B：Number of firms |
| Number of treated firms |  7,293  |  180  |
| Number of untreated firms |  33,924  |  23,205  |
| Number of all firms |  41,217  |  23,385  |
| Panel C: Pseudo-$R^{2}$ Change before and after matching |
| Unmatched | 0.419 | 0.186 |
| Matched | 0.119 | 0.069 |

Notes: (1) The dataset used in PSM is converted from the panel dataset to a year-average dataset. (2) Industry and region dummies refer to 2-digit level industry and county-level region, respectively. (3) The one-to-one nearest neighbor matching technique is employed to conduct PSM. (4) Panel A shows the results of identifying IFDI and OFDI firms by using Logit models, respectively. (5) \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively. (6) Panel B show the number of treated (i.e., I(O)FDI firms) and untreated firms (non-I(O)FDI firms), respectively. (7) Panel C display Pseudo-$R^{2}$ changes of identifying I(O)FDI Logit models before and after matching. Obviously, the identified capability of Logit models to I(O)FDI firms have declined after matching.

Table A8: The results of placebo test 2 (fictitious I(O)FDI firms selected by PSM) and 3 (firms with randomized coordinates)

|  |  |
| --- | --- |
| Variable | Dependent variable: $RDI\_{it}$ |
| 　 | Panel A: No truncated | Panel B: 100km |
| 　 | A-1 | A-2 | A-3 | B-1 | B-2 | B-3 |
| 　 | Employee | Sales | Assets | Employee | Sales | Assets |
| **Placebo test 2** | 　 | 　 | 　 | 　 | 　 | 　 |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$$ | 0.0250 | 0.0133 | 0.0340 | 0.0251 | 0.0133 | 0.0346 |
|  | (0.0234) | (0.0132) | (0.0263) | (0.0235) | (0.0132) | (0.0266) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$$ | 0.0010 | 0.0148 | 0.0097 | 0.0007 | 0.0142 | 0.0094 |
|  | (0.0044) | (0.0099) | (0.0113) | (0.0044) | (0.0098) | (0.0112) |
| Number of observations |  41,049  |  41,049  |  41,049  |  41,049  |  41,049  |  41,049  |
| Number of firms |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |
| **Placebo test 3** | 　 | 　 | 　 | 　 | 　 | 　 |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{IFDI}$$ | 0.0006 | -0.0005 | -0.0043 | 0.0010 | -0.0004 | -0.0040 |
|  | (0.0096) | (0.0012) | (0.0069) | (0.0096) | (0.0012) | (0.0069) |
| $$∑\_{j=1,j\ne i}^{J}w\_{ij}Z\_{jt}^{OFDI}$$ | -0.0005 | 0.0012 | 0.0009 | 0.0003 | 0.0020 | 0.0016 |
|  | (0.0089) | (0.0102) | (0.0086) | (0.0089) | (0.0101) | (0.0085) |
| Number of observations |  41,049  |  41,049  |  41,049  |  41,049  |  41,049  |  41,049  |
| Number of firms |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |  20,965  |

Notes: (1) Employee, sales, and total assets are employed to capture the spatial spillovers, respectively. (2) The inverse-haversine distance matrices of non-truncated and truncated forms at 100 km are used in Panels A and B, respectively. (3) \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively. (4) Robust standard errors are in parentheses. (5) Other control variables are omitted in the table.



Figure A1: The spatial distribution of IFDI firms in Shandong Province, China, in 2007

Notes: (1) The darker color represents a higher proportion of IFDI in the region. (2) The map is a thermodynamic diagram, with 10km as the thermodynamic radius. (3) 6,080 IFDI firms are depicted in the map.



Figure A2: The spatial distribution of OFDI firms in Shandong Province, China, in 2007

Notes: (1) The darker color represents a higher proportion of OFDI in the region. (2) The map is a thermodynamic diagram, with 10km as the thermodynamic radius. (3) 172 OFDI firms are depicted in the map.