**Appendix**

**Mechanisms behind observed trends**

Figures A4-6 show plots of secondary outcome variables that Act 10 likely affected. The percentage of teachers with a master’s degree has an upwards trend for both states before 2011. In the first few years after, the trend flattens out more for Wisconsin than Illinois, indicating that teachers in Wisconsin were relatively less qualified post Act 10 compared to Illinois teachers. Average teaching experience also has an upward trend for both states before 2011. Afterwards, average teaching experience falls further for Wisconsin compared to Illinois. While there are no clear trends related to Act 10 for teacher salary, on average teachers from Wisconsin continue to be paid less than teachers from Illinois. These figures suggest that worsening teacher quality, as indicated by qualifications and total experience, could explain the observed decline in educational outcomes after Act 10. Still, these figures only offer a preliminary insight into the potential mechanisms behind the observed worsening educational outcomes.

A.1 – variable descriptions

|  |  |  |
| --- | --- | --- |
| Variable | Type | Description |
| ***Primary outcomes***  Dropout rate  Proficiency rate  Chronic truancy rate  ***Secondary outcomes***  Master’s  Teaching experience  Salary  ***School-level***  School size  Percent white  Percent black  ***District-level***  Local property taxes  Total revenue | Percentage  Percentage  Percentage  Percentage  Continuous  Continuous  Discrete  Percentage  Percentage  Continuous  Continuous | Event rate: the percentage of students who drop out in a single year without completing high school.  The percentage of students achieving ‘proficient’ or above in combined Math and ELA tests.  The percentage of students absent from school without a legitimate excuse for five or more school days during a semester. Before 2011, in Illinois being chronically truant meant absence for 10 or more school days.  The percentage of teachers with a master’s degree.  The average teaching experience for teachers in a school (not school-specific experience).  The average salary ($) teachers earn in a year.  The number of students in a school.  The percent of students who are categorized as ‘White’  The percent of students who are categorized as ‘Black’.  The average district-level local property taxes – indicator for district wealth and part of school funding.  The average district-level school total revenue. |

A.2 – Event study design using matched dataset

|  |  |  |
| --- | --- | --- |
|  | (1) | (2) |
| VARIABLES | Dropout rate | Proficiency rate |
| Event time -5 | -0.0505 | -0.00698 |
|  | (0.206) | (0.398) |
| Event time -4 | 0.510\*\*\* | 1.159\*\*\* |
|  | (0.181) | (0.362) |
| Event time -3 | -0.100 | 0.304 |
|  | (0.142) | (0.343) |
| Event time -2 | 0.238\* | -0.881\*\*\* |
|  | (0.134) | (0.312) |
| Event time 0 | 1.188\*\*\* | 0.961\*\*\* |
|  | (0.243) | (0.345) |
| Event time 1 | 1.206\*\*\* | 1.147\*\*\* |
|  | (0.248) | (0.375) |
| Event time 2 | 1.153\*\*\* | 0.0908 |
|  | (0.222) | (0.375) |
| Event time 3 | 1.126\*\*\* | 0.116 |
|  | (0.240) | (0.386) |
| Event time 4 | 1.191\*\*\* |  |
|  | (0.230) |  |
| Constant | 7.328\*\*\* | 42.42\*\*\* |
|  | (2.644) | (4.801) |
| Controls | Yes | Yes |
| Fixed effects | Yes | Yes |
| R-squared | 0.680 | 0.969 |

Note: models include controls for school characteristics (percent White, Black, Hispanic, Asian) and district level characteristics (local property taxes and total revenue). School and time fixed effects included. Standard errors are clustered at school level and all models are weighted by school size. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

A.3 - Event study design using pre-match dataset

|  |  |  |
| --- | --- | --- |
|  | (1) | (2) |
| VARIABLES | Dropout rate | Proficiency rate |
| Event time -5 | -0.159 | -0.0312 |
|  | (0.254) | (0.378) |
| Event time -4 | 0.553\*\*\* | 1.151\*\*\* |
|  | (0.178) | (0.341) |
| Event time -3 | 0.0208 | 0.0956 |
|  | (0.128) | (0.304) |
| Event time -2 | 0.459\*\*\* | -0.772\*\*\* |
|  | (0.138) | (0.282) |
| Event time 0 | 1.321\*\*\* | 0.783\*\* |
|  | (0.232) | (0.352) |
| Event time 1 | 1.348\*\*\* | 0.947\*\* |
|  | (0.260) | (0.388) |
| Event time 2 | 1.305\*\*\* | -0.152 |
|  | (0.268) | (0.393) |
| Event time 3 | 1.266\*\*\* | -0.121 |
|  | (0.307) | (0.413) |
| Event time 4 | 1.332\*\*\* |  |
|  | (0.282) |  |
| Constant | 7.278\*\*\* | 40.22\*\*\* |
|  | (2.589) | (5.004) |
| Controls | Yes | Yes |
| Fixed effects | Yes | Yes |
| R-squared | 0.667 | 0.970 |

Note: models include controls for school characteristics (percent White, Black, Hispanic, Asian) and district level characteristics (local property taxes and total revenue). School and time fixed effects included. Standard errors are clustered at school level and all models are weighted by school size. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

A.4 – event study design examining changes in school composition following Act 10

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Percent White | Percent Black | Enrollment |
|  |  |  |  |
| Event time -5 | -1.131\*\* | -0.692\*\* | 23.51\* |
|  | (0.468) | (0.312) | (12.84) |
| Event time -4 | -0.704\* | -0.625\*\* | 28.06\*\* |
|  | (0.394) | (0.251) | (11.97) |
| Event time -3 | -0.221 | -0.344\*\* | -18.94\* |
|  | (0.332) | (0.162) | (11.31) |
| Event time -2 | -0.0441 | -0.403\*\*\* | -4.711 |
|  | (0.246) | (0.110) | (5.936) |
| Event time 0 | -0.00764 | -0.0131 | -0.200 |
|  | (0.274) | (0.228) | (9.464) |
| Event time 1 | 0.104 | 0.198 | 0.272 |
|  | (0.301) | (0.245) | (9.978) |
| Event time 2 | -0.0302 | 0.640\*\* | 3.149 |
|  | (0.331) | (0.284) | (10.26) |
| Event time 3 | 0.0274 | 0.565\*\* | -1.803 |
|  | (0.393) | (0.276) | (12.03) |
| Constant | 64.03\*\*\* | 14.81\*\*\* | 851.6\*\*\* |
|  | (0.0505) | (0.0456) | (2.089) |
| Controls | Yes | Yes | Yes |
| Fixed effects | Yes | Yes | Yes |
| R-squared | 0.992 | 0.987 | 0.976 |

Note: Standard errors are clustered at school level and models are weighted by school size. Time and school fixed effects included and robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

A.5 – Triple difference model using pre-match dataset

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
| VARIABLES | Dropout rate | Dropout rate | Proficiency rate | Proficiency rate |
| DDD estimate | -3.710 | -1.097 | -12.13\*\*\* | -13.13\*\*\* |
|  | (3.378) | (2.839) | (3.907) | (3.451) |
| Controls | No | Yes | No | Yes |

Note: models include controls for school characteristics (percent White, Black, Hispanic, Asian) and district level characteristics (local property taxes and total revenue). Standard errors are clustered at school level and all models are weighted by school size. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

A.6 – DiD model comparing public and charter schools in Wisconsin

|  |  |  |
| --- | --- | --- |
|  | (1) | (2) |
| VARIABLES | Dropout rate | Proficiency rate |
| DiD estimate | -1.959 | -1.651\* |
| Controls  Fixed effects | (1.854)  Yes  Yes | (0.993)  Yes  Yes |
| R-squared | 0.574 | 0.832 |

Note: models include controls for school characteristics (percent White, Black, Hispanic, Asian) and district level characteristics (local property taxes and total revenue). Standard errors are clustered at school level and all models are weighted by school size. Time and school-level fixed effects are included. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Chart, box and whisker chart

Description automatically generated

Figure A1: Test for change in school composition (percentage of students who are White) following Act 10

Chart, box and whisker chart

Description automatically generated

Chart, box and whisker chart

Description automatically generatedFigure A2: Test for change in school composition (percentage of students who are Black) following Act 10

Figure A3: Test for change in school composition (student enrollment) following Act 10

Chart, line chart

Description automatically generated

Figure A4: Percentage of teachers with a master’s degree over time

Chart, line chart

Description automatically generated

Figure A5: Average total teaching experience over time

Chart, line chart

Description automatically generated

Figure A6: Average teacher salary over time