Econometrics Assignment 4a

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1. 1. The number of restaurants within the relevant sample is 702. The number of restaurants in New Jersey is 662 out of all 820 restaurants. The number of restaurants in New Jersey within the relevant sample is 570.
   2. The minimum number of full time equivalents within the relevant sample is 3, the maximum number is 80.
   3. The minimum starting wage in restaurants within the relevant sample is 4.25, the maximum is 6.25.
2. 1. 1. Wage changes in New Jersey (blue) and Pennsylvania (red)



* + 1. Employment changes in New Jersey (blue) and Pennsylvania (red)



* 1. 1. Average starting wages

|  |  |  |
| --- | --- | --- |
| New Jersey | First wave | **4.6130** |
| Second wave | **5.0821** |
| Pennsylvania | First wave | **4.6536** |
| Second wave | **4.6188** |

1. Differences between first and second wave

|  |  |  |  |
| --- | --- | --- | --- |
|  | *First wave* | *Second wave* | *Difference ()* |
| New Jersey | 4.6130 | 5.0821 | **+ 0.4692** |
| Pennsylvania | 4.6536 | 4.6188 | **- 0.0349** |

1. Differences in differences

|  |  |  |
| --- | --- | --- |
| *New Jersey* | *Pennsylvania* | *(NJ-PA)* |
| + 0.4692 | - 0.0349 | **+ 0.5041** |

1. The difference in difference estimate gives an indication that the policy change (min. wage increase) leads to an increase in the starting wage in New Jersey. Here Pennsylvania is used as a counterfactual to the starting wage in New Jersey, the assumption thereby is that the states are similar to the extent that without the policy change, the change in starting wages would have been equal to the change that was measured in Pennsylvania. This difference-in-difference would provide a valid estimate in the case that the common trend assumption holds, thus when New Jersey would have faced the same trend that Pennsylvania followed if it had not seen an increase in the minimum wage.
2. We find that the difference-in-difference estimation suggests that an increase in the minimum wage from $4.25 to $5.05 per hour leads to a wage increase of approximately 50 cents in average starting wages in the fast food sector, assuming that the common trend assumption holds.
   1. 1. Average starting employment (FTE)

|  |  |  |
| --- | --- | --- |
| New Jersey | First wave | **17.2754** |
| Second wave | **17.5623** |
| Pennsylvania | First wave | **20.1136** |
| Second wave | **18.0985** |

1. Differences between first and second wave

|  |  |  |  |
| --- | --- | --- | --- |
|  | *First wave* | *Second wave* | *Difference ()* |
| New Jersey | 17.2754 | 17.5623 | **+ 0.2869** |
| Pennsylvania | 20.1136 | 18.0985 | **- 2.0151** |

1. Differences in differences

|  |  |  |
| --- | --- | --- |
| *New Jersey* | *Pennsylvania* | *(NJ-PA)* |
| + 0.2869 | - 2.0151 | **+ 2.302** |

By this estimate, the minimum wage increase is suggested to increase employment in New Jersey fast food restaurants by an average of approximately 2.3 units of full time equivalent employment. Here it is assumed by the common trend assumption that if New Jersey had not seen a minimum wage increase, it would have followed the relative employment-path that can be seen in Pennsylvania, which is the state that is used as counterfactual.





* + 1. The regression estimates the difference-in-difference effect of the treatment (minimum wage increase) on wages to be +0.4814\*\*\* and on employment to be +2.9140\*. These results are different from the results in (b) and (c). The effect on wages is almost similar (.5041 compared to .4814\*\*\*) while the effect on employment differs with a greater margin (2.302 compared to 2.9140\*). Overall, the signs and sizes of the different difference-in-difference estimation methods are quite comparable.
    2. The new estimates are as follows:

|  |  |  |
| --- | --- | --- |
| *Covariates* | *Variable* |  |
| Ownership dummy | Starting wage | **+0.4819\*\*\*** |
| Employment (fte) | **+2.9571\*** |
| Ownership dummy & Chain dummies | Starting wage | **+0.4764\*\*\*** |
| Employment (fte) | **+2.9590\*\*** |

* + 1. After including restaurant-specific covariates, the regression results are still very similar. The only noticeable change is that the effect on employment is now significant at the 5% level compared to before including covariates, when it was only significant at the 10% level. We would not have expected results to change as Pennsylvania and New Jersey are not dramatically different from each other in terms of chain store distribution percentages and ownership percentages.

A full documentation of STATA commands and output can be found below, as a print of the log file.