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, so 80.73% of all restaurants. The number of restaurants in New Jersey within the relevant sample is 570.
   2. The minimum number of full time equivalents in fast food restaurants 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 have similar trends, such that if the policy was not changed, the change or trend in starting wages in New Jersey would have been similar to the change or trend observed in Pennsylvania. This difference-in-difference would provide a valid estimate in the case that the common trend assumption holds, thus under the condition that wages in New Jersey face the same trend as wages in Pennsylvania. The other two assumptions that need to hold are as follows: 1. the treatment assignment is independent from trend in outcome 2. No other policies besides the minimum wage policies are pursued.
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 an average starting wage increase in the fast food sector of approximately 50 cents relative to the trend if no policy was pursued, assuming that all the assumptions hold.
   1. 1. Average full time equivalent employment (FTE)

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

1. Differences in average FTE 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 increases employment in New Jersey fast food restaurants by an average of approximately 2.3 units of full time equivalent employment relative to the common trend. 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. The other assumption stated in b.4. clearly needs to hold as well.





* + 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, since when we computed the distribution of ownership type and the distribution specific chain stores in New Jersey and Pennsylvania, we found Pennsylvania and New Jersey are not dramatically different from each other in terms of chain store distribution percentages and ownership percentages. This can be seen in our log file.

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