The Relationship between Taxes and Economic Growth among the 20 Largest Manufacturing States

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Outline

● Objectives
● Empirical Strategy
● Study Region and Data
● Preliminary Findings
● Conclusion
● Next Steps
Objectives

Is there statistical evidence to suggest a relationship between business taxes and economic growth?

- Existing research suggests that a ten percent decrease in taxes would cause a one to six percent increase in state economic growth.
- Existing research used average taxes when businesses are concerned with marginal taxes.
Empirical Strategy

Aggregated Model

1) \( \ln Y_{s,m,2000} - \ln Y_{s,m,1989} = X_s \beta_x + u_s \)

2) \( \ln Y_{s,m,2000} - \ln Y_{s,m,1989} = X_s \beta_x + \rho W (\ln Y_{s,m,2000} - \ln Y_{s,m,1989}) + u_s \)

3) \( u_s = \lambda W u + \varepsilon_s \)

Industry Model

4) \( \ln Y_{i,s,2000} - \ln Y_{i,s,1989} = X_{i,s} \beta_x + F_i + u_{i,s} \)

5) \( \ln Y_{i,s,2000} - \ln Y_{i,s,1989} = X_{i,s} \beta_x + F_i + F_s + u_{i,s} \)

6) \( u_{i,s} = \nu_s + \varepsilon_{i,s} \)
Variables

**Dependent Variables** \( (\ln y_{s,2000} - \ln y_{s,1989}) \)

Natural log of growth in industry value added 1989-2000 for industry models or manufacturing value added for aggregate models \( (\ln growth_{s,2000}) \)

**Independent Variables** \( (X_{i,s}) \)

1. Natural log of expected state industry value added in 2000 given growth in national industry value added 1989 to 2000 \( (\ln shift_{i,s}) \)
2. Predicted natural log wage index for 1990 \( (\ln wage_{i,s}) \)
3. Natural log of marginal business tax rate in 1990 \( (\ln taxrate_{i,s}) \)
300 State-Industry Combinations
Taxes and Growth

1990 Marginal Business Tax Rate

1989-2000 Growth in Value Added
Preliminary Findings
<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
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<td>AIC/ (Pseudo) R(^2)</td>
<td>AIC=-11.179</td>
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<td>R(^2)=0.5107</td>
<td>R(^2)=0.5869</td>
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Spatial Autocorrelation

Spatially Lagged Residuals (W)

Residuals (e)
Conclusion/Next Steps

- $H_0$: taxes have no effect on growth
- Unable to reject $H_0$
- We expect that the estimators are biased due to not accounting for public services such as education that are valued by firms.
- There also may the possibility that in contrast to the assumption that taxes affect growth, growth may be influencing the tax rates.
- Instrumental Variables Estimator
Thank You!!!